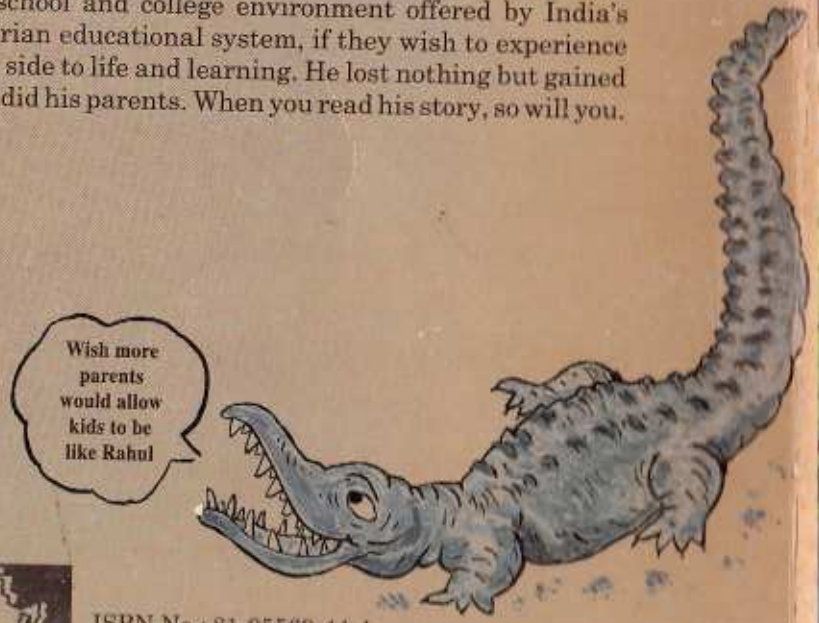
About *Free From School*

It's not every day that a 16 year old writes a book. In fact, girls and boys of that age are supposed to spend their time studying what *other* people write. It is presumed that at that age they do not themselves have anything significant or interesting to say. And the education system guarantees just that. The best rewards go to those who can parrot set answers to set questions in examination halls. Those who try to use their imagination or reply differently are often punished with low grades.

Rahul Alvares did not set out to write a book. Under the encouragement of his parents, he consciously set out to try his hand at learning things outside the school framework and you might say as a result, *Free From School* actually came looking for him! After his SSC, unlike his other colleagues, he opted out of schooling to follow his instincts: fond of reptiles, he chased them up at the Pune Snake Park and at the Crocodile Bank at Mamallapuram. In the process, he also picked up trails of spiders, earthworms and turtles. He caught snakes in the company of Irula tribals. He got bitten by hot-tempered reptiles. He came out of it all grinning and wiser.

Free From School is his story of a year out of school, when the learning graph of his young life went up leaps and bounds. He wrote it to encourage other boys and girls his age to move out of the sterile school and college environment offered by India's antiquarian educational system, if they wish to experience another side to life and learning. He lost nothing but gained a lot. So did his parents. When you read his story, so will you.



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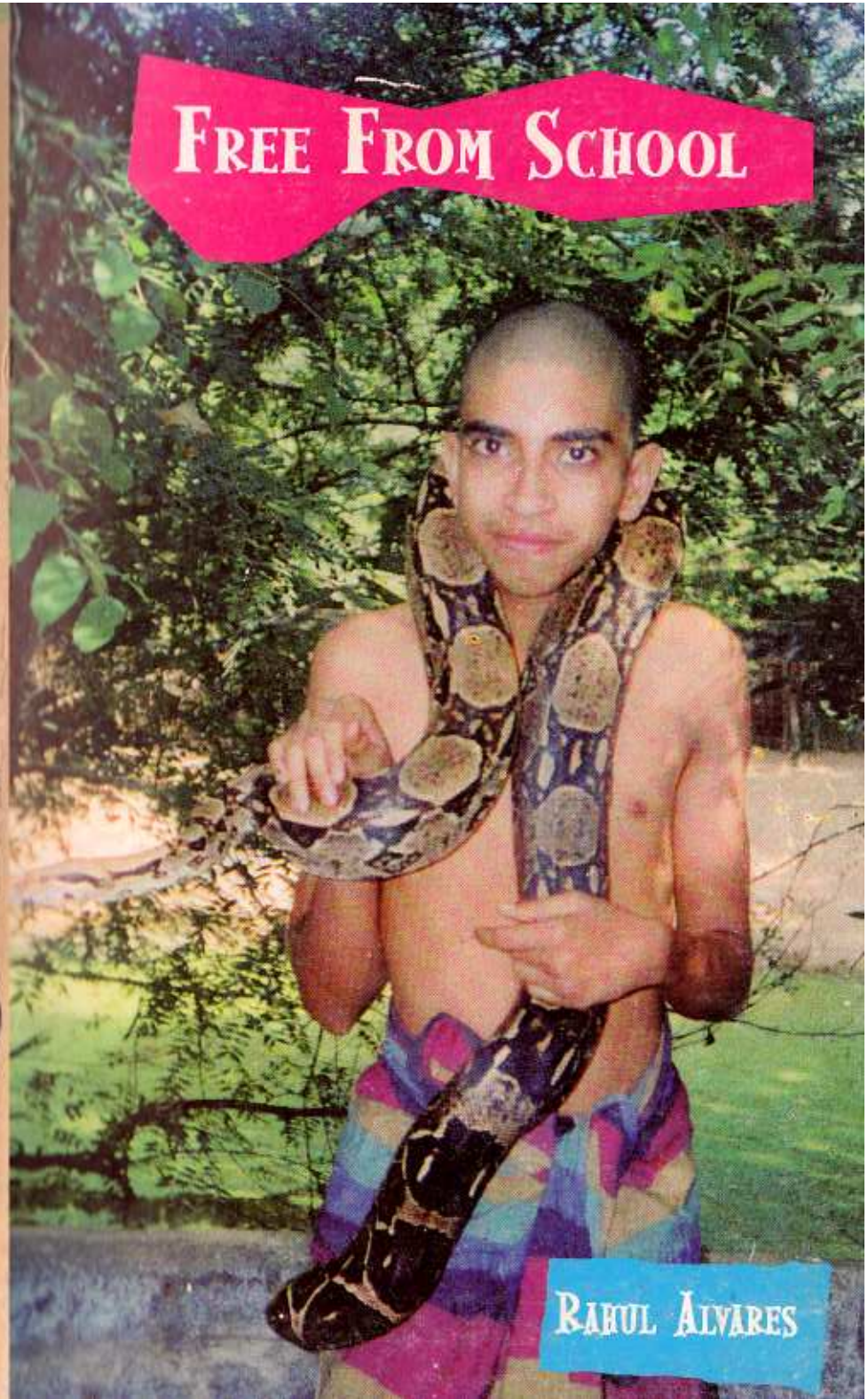

RAHUL ALVARES

Free From School

Free From School

By Rahul Alvares

Other India Press
Mapusa, Goa.

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By Rahul Alvares

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To My Parents,
Who Made it Possible

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A Note for Parents

Some kids like school. Most don't. Many parents will agree that schooling as we know it today is disagreeable to children by and large.

A very good symbol of disaffection is the craving to escape it as often as possible, usually by feigning illness. Another good symptom of distaste is the universal tendency among students to give teachers nicknames. Many of these nicknames invariably mock class teachers or make fun of them and are based on sharp collective observation of either their behaviours or some aspect of their physique.

Another important observation about schooling is that it often does not encourage learning. In fact there is good evidence that learning stops once schooling begins. A good example of this is language learning. While children can pick up any number of languages outside school or even before beginning to attend school, they are unable to learn additional languages even after several years of being taught them in school.

A century or two ago, schooling and teachers were considered necessary simply because many parents then were not educated. Today large numbers of parents are extremely well educated, often better than the teachers who teach their children. In such a situation it is not clear why the more educated should send their wards to the less educated to be educated.

However, general attitudes to school remain uncritical and are similar to attitudes of people towards factories. Ivan Illich—who wrote a marvellous book called *Deschooling Society*—has shown that early factory owners could not get normal

individuals to sit and work long dull routines in factories when these were first being erected during the period of the Industrial Revolution in England. The first factory workers were invariably beggars and vagrants who were threatened with prison if they did not cooperate and provide their labour to the factories.

Even today in several countries like ours where industrial culture has—fortunately—not yet been imbibed in its fullness, there is a large amount of absenteeism. Workers providing labour in Mumbai factories will be found to often leave their employment for long stints in their village or casually refrain from reporting for work if they do not feel like doing so.

The idea that people should remain tied to a machine for eight hours a day and follow this routine for months and years altogether is quite atrocious when examined closely. Any normal person at some stage is bound to revolt against such a prospect of spending his entire life. It may be good for the capitalist who owns the machine and wants to make profits. But how does it help the worker fulfill his life? God has not given people the precious gift of life and a creative imagination to have to spend most of it in an assembly line dully subservient to someone else's goals. (For a good book that shows how schooling today closely parallels and mimics assembly line production in a factory, read *Danger School*—another OIP publication).

To return to our discussion about the school, we can claim that learning generally starts when schooling ends or, better still, learning speeds up when schooling is interrupted. Most people are unable today to modify the school to enable permanent and speedy learning. Such learning almost invariably occurs if one is removed physically from school.

Like all other concerned parents, we send our kids to school not because it is the best option available. Ideally, we would be pleased to teach the children ourselves. We know of several families that have done this. Not being able to do this, however, we have sought means to limit the children's exposure to the school's learning culture. For instance, we do not

torture our children with attending tuitions or extra coaching classes intended to put them at the top of the class or designed to enable them to beat the rest of their class mates. Brilliance at the subjects taught at school is basically brilliance at mugging: coming out first is no indication that one is either bright or interesting. But we do encourage our boys to excel to the best of their abilities. If we are going some place out of Goa and can take the boys along, this is often done without a thought: missing classes is not a great bother at least in our family. We are fully convinced that the best learning comes from learning in the mother tongue; in the natural, outside environment; from experienced professionals.

Instead of aiming to make children competent to deal with the outside world in an independent way, the present system suppresses their desires and forces them to submit to roles the economic system requires.

Seeing that school learning had become quite a chore for Rahul and also conscious that he should get through his SSC at the same time, we came to a neat solution. In his tenth year we suggested to him that if he sat through his SSC and got marks that placed him in the first grade, we would allow him a break from further schooling. He couldn't believe we had made the offer.

Rahul not only got a first class, but emerged with a rank as well. So he had earned his break. During the year, he would be facilitated to do just about anything he pleased subject to funds available to a normal middle class family.

We only put a couple of conditions for the year off from school.

One of these was that he would write a daily account and at the end of the month, a special account, of events and experiences during the year. This, we felt, would enable him to maintain a certain discipline which all good learning requires.

We also impressed upon him that once he decided to take up a particular activity, he would self-discipline himself to complete it especially if it involved a commitment to others. To abandon a course of action merely because it turned out to be "boring" was not permitted.

The system of essay writing and daily diary keeping proved to be helpful in more ways than one for it forced him to put down his experiences, opinions, observed facts, and thoughts on what he was doing and wanted to do. We noticed that while in the beginning, from June to December, his decisions were slow and spaced out, from January to April he was able to make more rapid assessments of the time at hand and the possibilities of accommodating additional experiences in the limited time before his "break" was over. These were tremendous gains for a 16-year old who until then had literally been spoon-fed by the system on what he should do or yearn for.

To his good fortune, he was able to maintain a diary, which under our persuasion and the patient guidance of Anita Pinto, he has now converted into a full-length book.

The pressures that modern day schooling exerts are enormous and continuous. For ten long years, the routine examination system weighs down heavily on the child's shoulders. Till today no reasons are given for the large quantities of information that students must digest over the period of a decade. That most of the material is indigestible is apparent from the fact that once it is vomited out in the examinations, it is generally forgotten as well.

Thereafter, without even a breather, the Std.X student must decide almost immediately what discipline he will follow without having any idea whatsoever about what each discipline would entail in terms of his liking, appeal, preference and desire. Often the choice is made not *by* him but *for* him by his ambitious parents who push him either into one or other of the so-called lucrative professions of engineering or medicine. Often, after a child has made a quick selection and spent a couple of years in college, it is too late for him to change course if he finds the course work unsuitable to his aims and aspirations.

Giving the child a break for a year gives him a chance to breathe, to experiment and to make a reasonably informed choice based on a full year of such experimentation. (Seeing the state of the employment market today, we do not feel getting into it with a one year delay is fraught with any serious consequences!) We recommend that during this one year, the boy or girl should be placed for experience in different trades and professions for which they have a clear preference. Since most parents have friends in different professions, short-term apprenticeships are not at all difficult to arrange. This may be conducted either in one's own village or city or as in the case of Rahul, in different cities of the country.

We feel the child in no circumstances should use the period to familiarise himself or herself with its parents' work. The objective should be to conduct the internship in specific areas where the child has a great amount of interest, ability and longing. In this important sense, the one year break should never be career-oriented—it should be simply what it is: one year of freedom to do the things you want to do, even if it does not become your choice later on. The child could learn painting or singing or acting or dancing or carpentry, theatre, welding, the Internet, all just because he likes doing it, as a contrast to ten years of studying things he was told were good for him. And he should not intend to earn any money while doing it either.

After the break is over, the child should be able to make a realistic estimate together with his parents' consultation about what would be the most suitable course to undertake during college or even whether to opt out of college and university altogether. The child may, out of desire, finally decide to follow in its parent's professions but this will also be largely out of choice and not out of compulsion.

It is important to constantly converse with the child during the break period—to understand and appreciate the choices he is making, to suggest options, to guide, to think out ways to overcome obstacles for often it is an unchartered course. We sat as often as possible with Rahul to help him modify his programme to suit emerging or changed situations.

The Other India Press is publishing *Free From School* because it feels the book—based on real life experience—can offer parents good reasons why avoiding school for limited periods of time may be a healthy practice. Our society and

schooling system permit such breaks from school. Rahul, for example, had no difficulty whatsoever in rejoining college once his break was over. All it requires is that parents and children take the plunge. Learning will never be the same again thereafter.

Parra, Almeidavaddo,
Goa 403 507 India.

Claude and Norma Alvares

Rahul leaves Parra and family for the world of snakes and crocs!

HI! FROM THE AUTHOR

A year ago if I had been asked to write a book all by myself, I would have screamed and said: 'What! I write a book? You must be crazy! What's there to write about? What do I *know*!'

Today, I must tell you, I have an altogether different response. After what I did for a whole year last year, I think I have much to convey to you readers out there. When my parents gave me the idea and the support, I was thrilled at the prospect of writing a whole book all by myself, at just seventeen years of age.

The big question you're going to ask is: "Well, so what *did* you do last year?"

I took a break from school and had a bash at 'alternative education', experiencing real life as it were, in the company of snakes, earthworms, frogs, spiders and other creatures who have much to teach us if we would only care to learn from them.

There is a bit of history to this one year sabbatical...I have always been very interested in nature from a very young age. My parents tell me that as a child I could watch ants crawl by for hours, or chickens scratching around for food, and would later describe in great detail all my observations.

I even tried my hand at training cocks to fight.

As a child I had for pets, at various times, a tiny duckling, a white mouse that I would carry on my shoulder as soon as I got home from school—and which would run all over me as I carried it about from place to place—rabbits and so on. As I grew older, my interests shifted to wildlife. So it was that

when I was in the ninth standard and on a family holiday at Pune, one of the highlights of that vacation for me was our visit to the Pune Snake Park.

I have always been fascinated with snakes and by the skills of people handling them. At the Snake Park, my father met the Director, Mr Neelam Khaire, and asked him whether I could come there after I finished my SSC to learn about snakes. And happily, he agreed. My parents then promised that I would get a whole year's break from school if I worked hard for my SSC Board examination. That's how the idea of breaking off from school came about.

I jumped at this offer and promised to study hard for the board examination. As a result, I did excellently and got a distinction with 87% ranking 168th out of approximately 20,000 students that answered that year. Naturally, I held my parents to their promise and was overjoyed when they agreed. So while all my friends trotted off to college, I saw a whole year of freedom, fun and wild life in front of me.

My parents however put one major condition: that I would keep a daily diary recording all the events big and little that I experienced during the year. In addition, I was to write a monthly report plus a special report on any event in that month that I enjoyed best. I thought this sounded a bit like school and initially detested the routine. In fact, my early notings were sketchy, boring and repetitive.

But then, one night, my mother explained to me why it was important that I keep the diary. She also showed me how to write a diary...that it is not important that the happenings must be earth-shaking events. The beauty of a diary lies in recording seemingly trivial things, which when read later on give a detailed picture of events. Like taking photographs, she said. And so I tried to do as she taught. Today I can say that writing this book has become possible only because I have my notes to rely on as a double check on my memory. I merely have to re-read the day's notings and everything comes swimming back in vivid detail.

So here goes!

1

A FISH SHOP IN MAPUSA

You must try to understand that when I finished school I was as raw as raw could be. I had never travelled anywhere on my own, never purchased a train ticket, since like most kids my age I had only travelled with my parents or relatives and they made all the decisions. I had no experience of how to handle money (my knowledge being limited to spending the 50 paise or one rupee I would receive as pocket money now and then).

So while I had set my sights on travelling far and wide my parents wisely thought that I should begin by learning to manage on my own within Goa itself. It was also the rainy season and travelling around the country would be much more difficult they explained.

So I started out by helping at an aquarium shop in Mapusa, the town nearest my village. The proprietor of the shop is Ashok D'Cruz, a college friend of my father's. I must tell you about Ashok. He is no ordinary businessman: keeping fish is a passion with him. He is far more interested in chatting with his customers about fish than making money selling them. I have never seen him forcing any of his customers to buy from his stock of aquarium fish.

In fact, it was Ashok who introduced me to the amazing world of aquarium fish way back when I was just nine and studying in Class V. Under his guidance then, I experimented with breeding guppies, platties and mollies, fairly simple types of fish to breed. However, it was a matter of great excitement for me at that time to be successful in my experiments and

Ashok was generous enough to even buy back from me the baby fish I reared just to encourage me. Later I developed sufficient confidence to experiment with and breed more difficult types of fish, like Siamese Fighting Fish and Blue Guramies—all under the expert tutelage of Ashok.

So it was to Ashok's shop that I went every morning at 9.00 a.m., speeding on my bicycle to be on time. I would stay there until lunch time, a regular hands on, doing whatever I was asked to do.

Ashok's shop is not very large. It is a two-roomed shop on the ground floor of the Gomes Catao complex. It has a display section in front and a store room at the back. The showroom has about twenty fish tanks on display with a variety of fish that Ashok purchases mainly from Mumbai. Each tank stores a particular species of fish. Ashok's shop is located away from the main market area so he does not have the advantage of casual customers dropping by. However Ashok has his regular customers and there are always at least twenty to thirty customers daily.

During my first few days at his shop, my work was only to watch the tanks, clean those which were dirty, remove the dead fish and do some other small jobs. I also fed the fish and treated the wounded and diseased fish. Sometimes, I also attended to customers. Gradually, I began to accompany Ashok on his rounds to various places.

A gentleman in Moira wanted to set up an aquarium at his home. He had a tank. He also had definite ideas about how he wanted it to finally look and Ashok was called to see how it could all be done. The man sent his car for us. At his house we discussed the location of the tank, lighting arrangements, the water filters, the kind and quantity of fish he would like to have, and maintenance. After we were fully satisfied that we had everything right and had noted down his requirements, we returned to Mapusa. Later he came for the material which we kept ready for him.

Another time I accompanied Ashok to a client's office to put a pair of Dwarf Guramies in the fish tank and to fix a picture as a backdrop for the tank. On such visits I watched carefully what Ashok did and soon enough Ashok started sending me on my own to visit some of his clients who had small or simple problems.

I went to clients to fix aquarium equipment such as air pumps and filters, to fix toys in the tanks, to check fish for diseases or if there was a sudden crisis such as fish dying in numbers, or if a client wished to add more fish to his collection. I was sent to collect overdue payments or simply to enquire how

Feeding the aquarium fish at Ashok's shop in Mapusa town

the aquariums were doing. Sometimes I went on my own to visit some of the places where we had set up tanks and enjoyed watching the fish swimming happily in their new homes.

One day my employer decided to send me as a spy to find out the prices of fish and fish food at a competitive fish shop. I tried to behave like a casual customer and walked coolly into the competitor's shop and gradually began to ask the prices of fish and fish food. After I had found out what was needed I bought a pair of cheap Black Mollies from his shop just to show him that I was a genuine customer. From the information I got, we found Ashok's to be comparatively cheaper than the competitor.

During this period I improved my knowledge about aquarium fish tremendously. This was mainly due to two things. Firstly, I had spent a lot of time observing the fish at Ashok's shop and getting practical experience from the places we visited. Secondly, I had been reading the fish books that my father bought for me as a gift for getting a distinction in my SSC exam. The books were quite expensive but well worth the cost. Being able to get theoretical knowledge and practical experience at the same time gave me a lot of confidence with regard to aquarium fish.

One of the important highlights of my experience at Ashok's was learning to make fish tanks. Ashok told me that since we were going through a slack period, he would teach me how to make fish tanks. I had to start from basics which meant purchasing glass for six tanks, having the glass pieces cut to specifications and then having the pieces delivered at the shop without a scratch.

I had accompanied Ashok on several occasions earlier to the glass shop and watched as he ordered glass explaining his requirements, or having a piece re-cut because it was done wrongly. In fact, I had been sent often to the glass shop for small purchases so I was fairly familiar with the owner and the procedures. Ashok had even taught me how to calculate the price of glass. Still it was a new experience for me when Ashok handed me some money and gave me general directions on what to do and I was on my own.

I managed to purchase the glass and also to get it cut to size. So far, so good. Now came the difficult part of transporting the glass pieces to the shop. I wondered whether I should get a rickshaw for the purpose but was a little hesitant since I hadn't checked what it would cost for the trip, short though it would be. While I was trying to make up my mind by testing the package for its weight, the shopkeeper assured me that I would be able to handcarry the glass to Ashok's shop, which is what I finally did.

I started out. In the beginning, it was no problem. However, the package grew heavier and heavier as I trudged up the road to Ashok's shop with rickshaws, taxis and motorcycles honking away on all sides. Even before I reached my destination I doubted the wisdom of my actions for I was tired and my arms ached but I dared not put down the glass simply because it was glass. When I finally reached the shop I heaved a sigh of relief that the glass was intact. Ashok was horrified at my decision and understandably very angry too for as he explained to me should I have had an accident on the way the consequences would have been disastrous and he was after all responsible for me! I truly learnt an important lesson that day.

Learning to make an aquarium tank is great fun. One has to first plan the size of the tank. For this one must first decide on the length of the tank. After that, the height and the breadth are to be proportionately calculated. The sides of the glass are held together with silicone, which is a glue, and which feels like rubber when it hardens. Silicone does not dissolve in water. The tricky part is being able to apply the silicone only to the edges of the glass and not letting your sticky fingers touch any other portions of the glass. Otherwise, the glass will look dirty, for the silicone marks will stay like a fingerprint on the glass forever. After the tank is resealed on the inside with silicone (to give double protection), it is left for a day to dry. The next day it is tested by filling with water and if all is well the tank is ready for sale and can be delivered to the customer.

After I was taught how to do the first tank, I started helping with the rest. I recall how once by mistake I stuck the

glass upside down. "There's something fishy about the looks of this tank," said Ashok. When he realized what my mistake was, he very nearly put me into the tank!

My first opportunity at testing my skills at finding out the reasons for "fish dying in an aquarium" (the most common complaint from customers) came when the manager of Hotel Osborne in Calangute asked Ashok to come and examine their aquarium on the hotel premises. The fish were dying, he said. The owner of the hotel was a very good customer of Ashok's and so Ashok was keen to solve the problem. However as he could not go himself that day and did not wish to delay matters, he decided to send me instead. He gave me the manager's visiting card, directions to the hotel, some fish medicines and a pump to install in place of the old one which was defective and I was on my own. I was proud and happy that Ashok felt confident to entrust me with such an important job.

I left in the evening for the hotel. I found it with no problem at all. It was a large hotel with lovely lawns and a swimming pool. I walked into the hotel proudly, with my head held high, and tried to act as if I were a very experienced fish doctor. I went and met the manager. He told me which fish had died. I searched for symptoms of disease but found none. I then realised that the problem was very simple and one that is very common: a case of overfeeding. Fish require food in proportion to their size but often people put more food than necessary into the tank. The extra food makes the water cloudy and polluted and this causes the fish to die.

I cleaned the tanks, replaced the pump, checked the filters and showed the hotel staff how to feed the fish. I even managed to do some sales work by selling them some fish medicines which they could keep as standby and made a bill for them on the bill book that Ashok had given me. They seemed satisfied with my work and made me a cup of tea, which I didn't drink because I don't drink tea. After I had finished I couldn't wait to tell Ashok about my experience.

During this period, I took the opportunity once to visit fish shops in Panjim which I had heard about but had not yet seen. The occasion came when my 3-gear cycle broke down and

I needed to go to Panjim to get spares. I tried to persuade my mother to get them for me from Panjim since she went there often. She refused, saying that I should learn to do things on my own. That's when I thought of making a whole-day trip to Panjim to buy the spares, visit fish shops and also make a few purchases for Ashok.

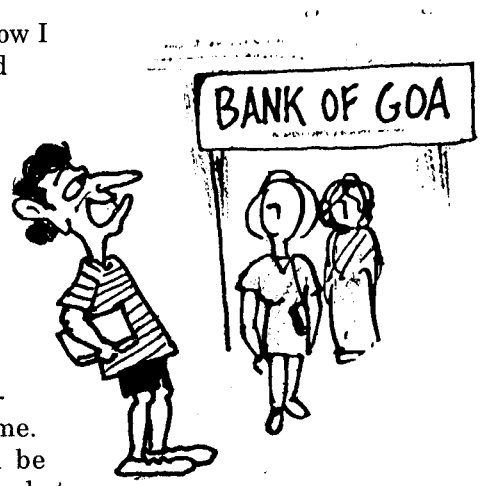
The next day, I accompanied my mum to Panjim where she showed me a few essential places and then left me on my own. I was a bit nervous but was determined to manage somehow. I first went to the Kamat restaurant to eat as I was hungry. I was amazed at how much it cost me to fill my stomach outside home! After that, I searched for a shop from where I could purchase silicone (Ashok's errand). After a lot of asking around I found the place. Then I looked for the cycle shop, found it quickly enough but discovered that the item I wanted was out of stock and would be available only the next week.

I was then free to visit the two fish shops I had in mind: "Bislin" and "Something Fishy". Bislin was well stocked and had many types of exotic fish but I found it very expensive. I chatted with the people who ran the shop (it is a family business). They also kept birds for sale. After watching the fish for sometime I decided to go to Something Fishy which was just around the corner. At Something Fishy, I was disappointed at first sight to see very few fish. The shop assistant told me that as they were expecting fish the following weekend almost all their tanks were empty. But what I saw remaining in the display tank amazed me. I saw man-eating piranhas with my own eyes for the first time in my life! However, the piranhas were quite timid and shy. Apparently, it is only when they are kept hungry that they become ferocious meat-eaters. Something Fishy also had exotic fish called Black Ghost which sold at Rs.3000 a pair!

Apart from learning about fish at Ashok's shop I gained a lot of other valuable experience.

I had never done banking before. But one day Ashok casually asked me if I would go to his bank to withdraw some money. I didn't feel like telling him that I had no idea of how to go about doing this. Instead I asked for directions to the

bank and set out. Somehow I figured my way around and got the job done. I was sent many times after that to the bank to deposit and withdraw money.



Although I had all the time in the world at my disposal I found it was not the easiest thing for me to effectively manage my time. Several times I would be speeding away on my bicycle to Ashok's shop because I had woken up late that morning. Or I had to push my lunch hour till later because I had not completed all my tasks for the day. It was an experience learning to plan my day properly and I would feel quite pleased with myself when I got things right on my own.

I also gained a lot of valuable insights into my own hobbies and interests since for the first time in my life I was on my own and free to make decisions or experiment with ideas I thought worthwhile.

I discovered that I have a great passion for reading books. I used to go every morning to the library, on my way to Ashok's shop, and pick up something to read during my free time. My favourite books were the Hardy Boys and I finished practically the entire series while I was at Ashok's. I also enjoyed comics like Tintin and Phantom.

Evenings, after I had finished with Ashok's shop, I would listen to the FM radio music programmes. Like any other teenager, I like fast and loud music. Fortunately, my aunt Allison visiting us from Canada gave me a walkman which enabled me to play my music without disturbing the others. I thought about starting to learn the guitar but my parents advised against starting guitar lessons immediately as I had plans to travel out of Goa in the coming months.

Letter writing is not one of my favourite things. However, I was forced to reply to the people who sent me letters and cash prizes, congratulating me on my examination results. I was overjoyed to receive prompt replies from several of my relatives and friends commending me on my choice of a year's sabbatical. I also realised that you only get letters when you write to people. However, I still don't enjoy letter-writing.

On Sundays, I used to do a few odd jobs to earn some pocket money. Like washing the car for which I used to get five rupees from my dad. I was also the main errand boy at home and I did all kinds of jobs like paying the electricity bills, buying the rations and so on.

All in all, working at Ashok's was a good beginning.

Field Work Notes:

NOW JULIE HAS A FISH TANK

Juliet and Peter D'Souza are college friends of my parents. They live at Calangute. Peter is a criminal lawyer and Juliet is a school teacher. Our families occasionally go on outings together. On one of these picnics during my SSC year Juliet discovering my interest in aquarium fish promptly tried to get me to assist her in setting up an aquarium in their home.

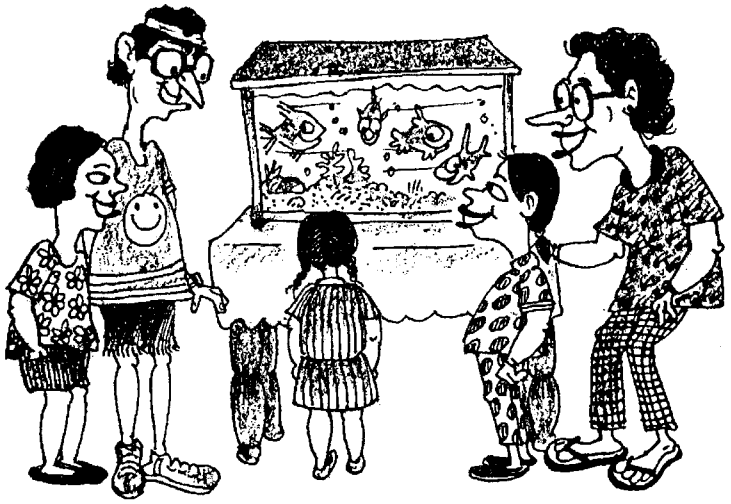
Actually they did have a fish tank earlier but the bottom glass had cracked and Juliet had given it to Ashok for repairs. And there it remained, in Ashok's shop, with nobody attending to it. Juliet had reminded me on several occasions about the tank but there was little I could do other than pass on her reminders to Ashok. When I started working with Ashok I quickly took the opportunity of keeping my promise to her.

The first problem was to find the tank. I began searching for it in the storeroom of Ashok's shop. I found it right at the bottom of all the other big tanks. I was relieved to see it still in one piece. Ashok and I then removed the broken bottom glass. We took the measurements and bought new glass from the glass shop. After fixing the tank, I went to Peter's of-

fice and told him to pick it up and take it home whenever he could.

Peter came by and took it home the next evening. A few days later I cycled down to their house to set it up. Once there I realized that Juliet did not have any material for placing in the tank except a little gravel which was not enough to cover even the base of the tank. I explained to her all the essential items needed and she gave me a freehand to purchase material and decorations for the tank. On my next visit, I took a few kilos of gravel, a pump, plastic plants, fish medicine, the undergravel filter, some pipeline, a few regulators, T-joints and a fishnet. I also took four types of aquarium toys and two shells for her to choose from.

I started off with washing the gravel, then fixed the under-gravel filter. I next poured gravel over the filter, and placed the decorations of shells and toys on top. Then the tap and filters were joined to the air pump. All this while I was watched intently by Angelann and Miriam, Juliet's two young daughters, who kept offering opinions or help here and there. After about two hours, everything was ready. Only the fish and aquatic plants remained to be put in the aquarium.



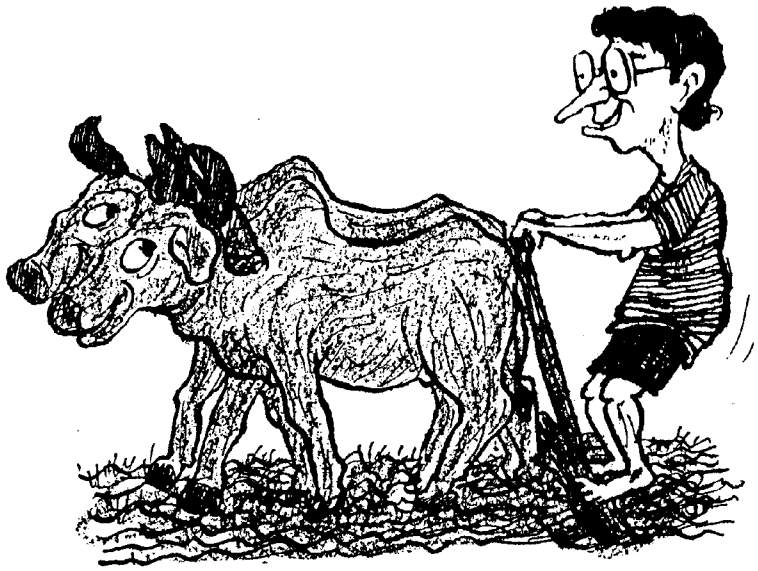
The task of selecting the fish for the tank was not part of my assignment as Julie said that she would buy the fish from a fish shop in Candolim. However, as she doubted whether live plants were sold in Candolim, she asked me to send her the plants through Peter. She also told me to prepare a bill for her which I was to hand over to Peter. All this I did within the next two days.

A week later, I had to visit Peter and Julie's place to deliver a note to Peter from my dad. I was keen to see the fish she had bought and how they were doing in the new home I had made for them. As a present I decided to take five pairs of guppies from my garden tank. Imagine my shock when I found that the tank was just as I had left it, with no fish at all to inhabit the lovely quarters. I was glad I had brought along the guppies and these became the first lot of fish to inhabit the tank. I also fixed the light and the regulators and set the plants properly.

Juliet's little daughters crowded round me as I stood back to admire the now complete aquarium: fish swimming happily with newly installed plants and air filters bubbling away in a corner. Juliet soon joined us and thanked me warmly and to my utter surprise slipped a 50 rupee note into my pocket. I protested that she should not pay me for this as I was having great fun but she insisted that I take the money and this became my first earning.

In similar fashion I set up fish tanks for a few other family friends. Besides having a lot of fun and gaining valuable experience, I also earned pocket money! Avdoot and Rekha Munj in Mapusa have a lovely big tank which I helped set up for their daughter; Alvito and Celine Santiago from Parra also had an empty fish tank which they wanted to put back in use and I organised the fish for them too.

There was also the large fish tank in the office of the Principal of my school (St. Anthony's at Monte Guirim), which I had maintained during my school days. I continued to keep watch over it through my younger brother Milind, who, like me, is also a fish fan.



2

Learning a Bit of Farming

One of my plans for the rainy season was to go to RUSTIC Farm which is in Thanem, a small village near Valpoi in the remote north-eastern district of Sattari, so that I could gain some experience in farming. RUSTIC Farm holds a special attraction for me because I was born when my parents lived on this farm and we stayed there till I was three years old. Although I have no real recollection of that period, we have many photographs of my baby days on the farm and many stories that my parents tell us of those times. We still visit the place at least once a year and also maintain contact with several of the villagers who worked then on the farm. Yesu, our domestic help for the past 16 years comes from that area. In 1985 RUSTIC Farm was sold to the present owners

Shyam and Ujwala Achrekar. I had intended to stay with them for a month and learn about farming first-hand. Unfortunately due to some personal difficulties they could not have me visit them. It is one of the few regrets I had during my one-year sabbatical. As things worked out, however, I was able to learn a few basics about farming in my own village at Parra.

My neighbours, the Kandolkars, are a peasant family and during the rains they take to farming their own fields. They also do ploughing work for others. Guru, the eldest son, has a fine pair of bullocks for the purpose. It so happened that Guru was doing some masonry work at our house and I was chatting with him about my sabbatical when he casually asked me whether I would like to come ploughing with him. I jumped at the offer even as he seemed a bit surprised that I had so readily agreed. Next morning I was woken up early and we set out for the fields which are quite close to our homes.

Holding the plough may appear a simple task but believe me it is not so and calls for quite a lot of skill and stamina. The trick is to keep the plough in the centre and avoid cutting the hoofs of the animals at the same time. One needs to put the right amount of pressure on the handle as the plough should neither be too deep nor too shallow in the soil. Also one has to constantly keep one's eye on the bullocks to direct them to turn around at the end of the field and to lift the plough when it reaches a bund. Lastly (and this is most important) the bullocks must recognise you or else they won't take orders from you.

The bullocks knew Guru very well but I was a stranger so Guru made me keep shouting cries of *"heeree heeree"* which is how they get the animals to move—so that they would at least begin to recognise my voice. Although I went ploughing with Guru for several days in a row, he never let me plough on my own because getting the right balance was still very difficult for me and if any of the bullocks got hurt due to my inexperience he would have to give the animal at least 15 days' rest which would cost him heavily in earnings.

After the ploughing is done the ground has to be levelled for seeding. This is also done by the bullocks who drag a

wooden piece shaped like a broad fork across the field. This I was allowed to do on my own and I enjoyed it thoroughly. It was like having a nice ride, standing on the wooden leveller while the bullocks went up and down the field.

I also tried my hand at spraying seeds and later fertilizer, on the fields. Sometimes I did a bit of weeding, to while away the time in-between ploughing. On some days when we were ploughing it used to rain heavily and I enjoyed working in the rain with all the other farmers. After ploughing we would be treated to hot tea and bread or *pao baji* by the owner of the field.

I recall how surprised the owners of the fields we had ploughed would be on seeing me sitting with the other workers—dirty with mud like them—because naturally, they recognised me, since I am from the same village. One lady, in fact, thought I was playing truant. She told me she was going to inform my mother where I was that Sunday morning. She thought that I ought to have been in church attending Mass instead.

The field work was a good experience and one which I cherish. I helped Guru plough about half a dozen fields and even now when the rainy season approaches I remember that experience with warmth and pleasure.

3

PLANT FESTIVALS

The rainy season brings out the average Goan's passionate love for plants and some of this fervour and enthusiasm finds its way into plant exhibitions and plant festivals. I would like to recount my experiences with two of them—at Saligao and at Siolim—two villages close to where I live. At the first I was a mere spectator but played a more active role in the second.

SALIGAO

Sunday, the 1st of July, was an unusually bright day for the normally dull, wet, cloudy rainy season. I was looking forward to going to Saligao to see an exhibition of plants and was glad for the dry weather as I pedalled the 20 minutes it took to reach Lourdes Convent, the well known school in the village where the exhibition was being held. I reached around 10.30 in the morning. The exhibition had already been inaugurated and the place was crowded with people all trying to enter the main hall where the exhibits were kept. I too did likewise.

The main exhibition hall was quite big and the plants were exhibited in pots in the centre of the hall. Many of the plants were for sale. They had been brought there by different people and most of the pots had the names of their owners on them. The cacti were grouped together on a table on one side of the hall and the prize winning exhibits of the flower arrangement competition on another. I noticed that the first prize had been given to a flower arrangement done inside a painted scooter tyre. I thought this a really unusual idea. The

two most attractive and unusual cacti were ones on exhibit: while one had a thin green base and a bright red lumpy top the other was like a cotton puff.

Besides the plants in the hall some classrooms alongside were also occupied with plants and other items for sale. There were food plants like coriander and coconut seedlings, ornamental plants such as money plants, creepers, and indoor decorative plants. There were also garden implements including spraying tools, cutters, flowerpots, seed packets and organic manures.

At eleven o'clock there was an announcement that there would be a talk given by Mr Francis Borges, the topic being 'Organic Farming'. Francis Borges is a college lecturer but is better known for his experience and knowledge of plants. He practises organic farming and has a nursery called Apurbai. He used to write a weekly column in a Goan paper the "Weekender". My dad had already told me about him so I was eager to hear what he had to say.

His talk dealt with the consequences of using chemicals (pesticides, insecticides, fertilizers) which he said was a recent happening in the world. He stressed the need to return to organic farming which he said was the only sensible way of farming. He also spoke about the role of earthworms as friends of the farmer.

Many questions followed. Most of these dealt with problems people faced while gardening at home. Mr Borges in his reply offered practical solutions which he himself had tried out successfully. For example, to the query, "Why does a papaya plant die after flowering?" he suggested building a bund round the base of the plant because water collecting there rots the papaya base stem. In this connection he also spoke of a medicine which he and his colleagues had invented to drastically reduce the diseases which attack papaya. He markets this as "Papaya Cure". By around noon the talk ended and I left for home.

SIOLIM

The plant exhibition at Saligao had given me an idea of what to expect at the next plant festival I attended, which was at Siolim. Here I took an active part thanks to the invitation I received from Alexyz, the well known Goan cartoonist, who was in charge of the Siolim Plant Festival called "Green Heritage". Green Heritage was started by Alexyz and his friends a few years ago and it has proved to be an enormous success with people eagerly awaiting the event each year.

I woke up early on the morning of August 11th, 1995 and pedalled away to Siolim, which is a picturesque village across

Assisting Alexyz with plants for the Siolim Festival

the hill from Parra. I found myself sitting at Alexyz's doorstep much earlier than expected. Alexyz and his wife Tecla arrived home in time for lunch. After lunch, I hopped on the back of Alexyz's Kinetic Honda and we set off to visit the homes of all those participating in the exhibition, informing them to keep their exhibits ready for us to collect the next day.

I woke up on the 12th morning to the sound of Alexyz's gibberish much like scatman's scat. "Come on man, let's get going", he yelled. He was a college friend of my parents and he is one of the funniest people I know. Just being in his company is one big laugh!

Our task that morning was to collect the plant exhibits from the homes of all those on our list. The tempo arrived at 9.30 a.m. We covered the base of the tempo with shrubs to act as cushions for the potted plants. We had a long list of homes to visit. Each time we picked up an item for the exhibition we tagged and numbered it so we would know the correct house to return the pot to later. We had to be careful at some houses otherwise we might have ended with torn pants ripped up by the huge Dobermans people owned.

When the tempo could carry no more we would return to SFX school where the exhibition was to be held in order to unload the pots and start out again. Each round was an experience of new people, new homes, new gardens. On one round we visited the famous pop singer Remo's house. His mother was taking part in the exhibition.

It took us all day to complete the list and we eventually made three trips round the village. We then arranged the pots on the benches in the school hall. Miguel Braganza (an agricultural officer of the Government who at that time was posted to the Indian Council of Agricultural Research in Old Goa) and Francis Borges (the same person who gave the talk on organic farming at the Saligao Plant Exhibition) were also there along with several other village boys and girls all helping in various ways to set up the show which was to begin the next morning. In fact by the time we finished it was already one a.m. of the 13th. We would have only a few hours of sleep before we would all be on duty again at 9 a.m. to complete the last minute jobs before the festival got started.

The Green Heritage Plant Festival lasted three days. The Director of the Agricultural Department, Mr P.K. Desai, inaugurated it at 11 a.m (instead of a ribbon to be cut between the doors of the exhibition, there was a creeper). He also released a book titled, *Green Aid III—Total Gardening* that the Green Heritage had published. The book was wrapped up in a large money plant leaf instead of wrapping paper. I thought this an unusual and apt idea. After the inauguration and the release of the book, the official made his speech which was followed by a funny speech made by Alexyz.

The Green Heritage programme had several aspects: (i) the exhibition, (ii) lectures and talks on different subjects and (iii) competitions of different kinds—all related to the green world.

The main exhibition hall was very big and it was filled with all kinds of plants, arranged in such a manner that people could move around easily and view the plants without too much difficulty. Altogether there must have been about two hundred pots. There were vegetable plants such as chillies and brinjals. There were flowering plants, cacti, creepers, ferns, bonsai of Banyan trees, peepal trees, etc. There were also lime trees, orange trees and chickoo trees all growing in pots.

On the stage in the hall, competition exhibits—vegetable-carving crafts and flower-making crafts of students from different schools—were kept.

Outside the hall there were two corridors. In one corridor the government nursery was stationed, where neem, mango, coconut, chickoo, tamarind, cashew and some other kinds of trees were being sold. Along the other corridor a variety of other items were kept on sale: a small table held copies of the book, *Total Gardening* as well as the previous two volumes released at the earlier exhibitions by the Green Heritage; another table held beautiful coconut handicrafts for sale. There was an elephant head, a table lamp, a skull, all made out of different parts of a coconut. Next to this, *The Other India Bookstore* had set up a stall with a large variety of environment titles. Further down was the *Garden Glory* stall sell-

ing various types of garden implements such as lawn movers, cutters, sprayers and other accessories. *Apurbhai* had a variety of organic manures like leaf mould, Karanji and bone meal besides ornamental plants, palms and creepers. There were pickles, squashes and medicine for papaya plants also on sale.

At the far end of the corridor was the canteen. Here, whenever we were thirsty or hungry, we went and had a cold drink or some snacks. I didn't have to worry about my bill, because it was taken care of by the Green Heritage group.

Next to the canteen, there was a small table, a blackboard, some chalk and some benches. This was where the programme of lectures and talks was held. Altogether there were four talks given during the Green Heritage Programme: on vegetable carving, jams and squashes, wine-making, and cacti.

I decided to attend the talk given on cacti by a person who grew cacti in his flat. His talk was extremely interesting and full of practical information and handy hints on how to grow cacti. Although I have not tried my hand at growing cacti, yet I took down detailed notes which I shared with my mother, who as I correctly thought was very happy to get the information as it helped her in her little cacti rock garden. And it certainly was a very educative talk for me.

All through the three days I was assigned simple jobs like watching over the plants in the main hall, watering the plants, carrying pots and furniture around, handling the sales of the Green Heritage booklets, and so on. And with Alexyz around each task was great fun.

On the last day, there was the prize distribution ceremony. I was proud and happy to receive a special certificate for having assisted in the Green Heritage Festival. As the fair came to an end the organisers all felt that it was yet another successful event. I was happy to have been a part of it. But the fun was not yet over for we all had a barbecue dinner that evening that lasted well into the early hours of the morning. We slept only briefly for there remained the final task of returning the pot exhibits to their respective owners. This we commenced early next morning.

I had enjoyed my work at the Green Heritage and my stay at Alexyz's house. I was indeed sad when it all ended. I rested the next day at Alexyz's house and on the 18th morning, left for home.

Field Work Notes:

GROWING CACTI AT HOME

Cacti are plants suited to the desert and we must keep this factor in mind always when growing ornamental cacti in our gardens, for it helps in the survival of the plant. For example, a cactus should never be watered over its body as it will start to rot. This is because it is covered with a waxy coating which prevents water loss through evaporation. When one waters the cactus over its body, the waxy coating is washed away and the plant begins to rot. The amount of water that you must supply to the cactus is very much dependent upon the season and upon the climate of the place. During the summer season one should water cacti every four days whereas in the rainy season once every fifteen days is quite enough.

Cacti need a minimum of two and a half hours of sunlight per day. However they should not be kept all day in the sun because they may wrinkle in too much of bright sunlight. Unlike other plants cacti produce carbon dioxide during the day and oxygen during the night. Hence, they are ideal plants to be kept in bedrooms to freshen up the air at night.

If the cactus plant is to thrive and prosper, the size of the pot in which it is grown has to be carefully monitored. The pot should always be a little smaller than the plant itself because it is only when the plant has to struggle to survive that it will thrive. If the pot is too spacious the struggle element is removed and the chances are that the cactus will die. Cacti are like human beings. When they suffer they will grow. Similarly if a cactus shows no signs of growth, stop the watering. It should be resumed only when the plant resumes growth.

The substrata of a cactus pot is ideally composed of pieces of broken bricks at the bottom, charcoal above it, then coarse sand and pebbles above it. Leaf mould is the best manure.

Grafting of cacti is very simple. A very small piece of the cactus plant should be stuck with cellotape to the plant that needs grafting. The smaller the piece the easier it is to graft. To reproduce cacti, one has to simply cut off a piece of the cactus, allow it to dry for a few days and then just place it over the cacti substrate. It will automatically develop roots.

To differentiate between cacti and other plants that look like cacti is very easy. All cacti have fine hair at the base of each thorn. The so-called thorns are in fact highly modified leaves which prevent loss of water through transpiration. If one ever gets pricked by cacti thorns, one should take cellotape, place it over the area where the thorns have penetrated the skin and then peel it off. All the thorns will get stuck to the cellotape and will be removed.

4

LEARNING ABOUT MUSHROOMS

Attending the Green Heritage plant festival in Siolim had one more advantage for me. It brought me into contact with Mr Miguel Braganza, an agricultural officer of the Goa Government. It was through him that I learnt of a two-day course on mushrooms to be conducted by the Indian Council of Agricultural Research (ICAR) at Ela Farm, Old Goa in the last week of August.

This programme also marked the beginning of my experience in getting around on my own. For, although the course was conducted in Goa itself I had never been to Ela Farm nor did I know anyone at the programme.

Mr Braganza had informed me that participants would be offered free accommodation on the campus. However, it was not compulsory to stay there. I assumed that most people would avail of the accommodation facilities offered since late evening transport is not very good in Goa. At any rate I enjoy camping out and so I asked my parents if I could spend the night on the campus. They agreed. My assumption however proved wrong as I turned out to be the only residential participant!

Anyway, on the morning of 24th August, after taking directions from my dad, I left for the ICAR at Old Goa which is about 22 kms from my home. I arrived there without any difficulty. The ICAR is located within Ela farm. At the gate I had to fill in a gate pass. Down the right lane was the ICAR office. On either side of the road were coconut, guava and chickoo plantations. Further down was a small office which looked

more like a lab with various specimens of preserved mushroom. I enquired about the course with the man in charge and was directed to the Farmers Training Centre.

Mr Miguel Braganza and Mr Oscar—the two persons conducting the course—were already there and so were some of the participants. We were first made to register our names for the course and immediately after and to my total surprise we were informed that each of us would receive a stipend of Rs.500 for attending the course. This appears to be a sort of bonus or incentive which is provided to the participants and is meant to cover expenses for transport, food, etc.

I noticed that all the other participants (there were thirty-three other students) were older than me. Most of them were farmers, so all the people who gave talks either spoke part English and part Konkani, or if the lecturers spoke only English then Oscar would translate into Konkani.

Miguel Braganza giving his lecture on muschooms

The course which basically comprised lectures and demonstrations started with a talk by the tall, thin, long-haired Nandakumar Kamat. His first question was: "What do you want to cultivate mushrooms for? Kitchen gardening, small scale production or large scale export?" Depending on your objectives you can decide on the variety and the quantity, he told us. His talk included slides of different varieties of mushrooms, poisonous and non poisonous.

The talk was lengthy but very interesting. It ended well past lunch time and most of the participants including myself were happy to go straight to a meal at the FTC canteen where a delicious fish curry *thali* could be purchased for just Rs.6.

The second session began at three in the afternoon. There were two talks in this session, the first by a scientist from the ICAR who spoke on pests and diseases that attack mushrooms. Among the problem areas he mentioned insects, fungi, bacteria and improper management.

Unfortunately most of the remedies he suggested were limited to spraying of insecticides and pesticides such as lindane, malathion dichlorose, copper sulphate or citronella oil. To be fair, he also laid stress on proper management and hygiene as an effective way to reduce diseases. Since none of us had ever grown mushrooms before there were not many questions or doubts raised at the end of his lecture.

Then there was a talk by a woman who explained to us the nutritional value of mushrooms. For half an hour she spoke on the low fat and sugar content of mushrooms and how mushrooms prevent pain in joints of bones, tooth decay and bleeding gums. It made me feel that I should make mushrooms my staple diet!

The programme for the day ended at 6 p.m. That's when I was surprised to discover that everyone was going home and I was the only residential participant. I decided to stay the night anyway since the organisers told me that adequate arrangements had been made for anyone wishing to do so.

I spent the evening and early in the morning the next day looking around the campus. I noticed that the ICAR had a small nursery, a flower garden, a small fish pond, pens for

small animals such as rabbits and chickens, cattle sheds and vast paddy fields. There was also an orchard with a variety of fruit trees such as mango, chickoo, coconut palms etc.

In the midst of all this greenery were the residential buildings with the canteen in between. I occupied one of the rooms on the first floor of the four-storey building. It was a small room, with two beds, a few lockers, a table and a mirror. Since there was no one else staying the night, the watchman was asked to stay with me for company. The canteen served good and cheap meals. I had already eaten there in the afternoon with the others. For the night the cook prepared some fish curry rice for me. The next morning I had a breakfast of bread and vegetables for three rupees only. That night, not having much to do, the watchman and I decided to walk up the hill at the back of the campus, at the top of which was a temple.

Most of the second day was conducted by Oscar. Oscar's presentation was more of a practical exercise. He gave very practical information on how to grow mushrooms and interspersed his talk with slides and live demonstrations. He showed us the inoculation and culture room for tissue culture as well as the ultraviolet tube where the mother spawn is prepared. Rushing up and down the lab and the lecture hall we were shown how straw is boiled, how the mushroom bags are filled, and so on. We were allowed to actively participate and fill in the bags ourselves. All the participants enjoyed Oscar's session and wished it could have been longer.

None of the participants had any experience with growing mushrooms for commercial purposes so Oscar had invited two people who grew mushrooms for the local market as well as for export purposes to address us. They had been growing mushrooms for the past one year, selling them fresh or dried according to the demand and they gave us very practical information based on their personal experience. They said that they filled two hundred bags of straw everyday. They told us of the problems they faced with pests (mainly rats) and diseases and also the difficulties they initially faced when selling mushrooms.

The programme finally concluded with a speech by the Director of the Farmers' Training Centre who told us about the general activities of the FTC and the ICAR.

Some of the students took spawn-filled bottles home. I didn't, because I knew I wouldn't be in a position to get into action immediately as my travel plans for getting out of Goa for the next few months were already underway.

So although I didn't really get into the act of mushrooms-growing, I learnt much and also made many friends.

Field Work Notes:
HOW TO GROW MUSHROOMS

There are many varieties of edible mushrooms, of which the oyster and button mushrooms are the most popular with both the mushroom cultivators and the general public.

Mushrooms can be eaten by anyone including children since they are easily digested and absorbed by the body into the bloodstream within two to three hours. They contain iron, vitamins, calcium and protein. They are especially good for pregnant mothers, and diabetic and blood pressure patients. Mushrooms have medicinal properties and are known to reduce heart, liver and blood diseases including cholesterol and stomach cancer.

Mushrooms can be profitably grown using little investment. However one has to master the techniques and follow all the procedures and requirements very carefully. One does not need land to become a mushroom cultivator for one can grow mushrooms even in one's own house.

Climate: Mushrooms require a temperature of 20-32° Celsius and about 35-90% humidity. They also require adequate ventilation, diffused light and semi-darkness. Too much light makes mushrooms dark in colour.

If the room temperature increases above 32°C, it should be decreased by hanging wet sacks around the place. However the sacks should be first sterilized using savlon, formalin or

dettol to avoid fungi or bacteria entering the room. If the temperature decreases below 20°C, then a 200W bulb (for a small room) should be lit to generate heat.

Spawn: Mushrooms are grown from spawn. The colour of good spawn is milky white with a sweet smell or no smell. The spawn should be compact, white on all sides and cottony. If it is yellow, it means that the spawn is old. Any other coloured patches seen on the spawn signify contaminant fungi in the spawn. Spawn should be maximum 18 to 20 days old.

To prepare mother spawn, one needs good quality jowar, wheat or gram. The seed should be of uniform size, good quality, free from pests and diseases and dry. The grain should be washed, all hollow grains should be removed and the remaining boiled for one hour so that it is half cooked. While boiling some formalin or savlon should be added to disinfect the grain. The grain is then spread on a disinfected muslin cloth and mixed with calcium carbonate. It is then filled into bottles which are tightly corked using nonabsorbent cotton. The bottles are then put into a pressure cooker.

The inoculation or the culture room for tissue culture was also shown to us. This room should be about 2.25 m in height and 1.25 m in length. Two tubes i.e. an ultra-violet tube and a normal tube light are used. A spirit lamp is also used. One can produce up to six generations from one bottle of mother spawn with the help of tissue culture. After six generations the strength of the spawn decreases and the yield of the mushrooms will be less.

Substratum: Paddy straw is the main substratum used for growing mushrooms—it contains cellulose and lignin, both of which are necessary for the growth of mushrooms. However many other kinds of substrata are also used, for example, saw dust, sacks, banana leaves, dry mango leaves, coconut leaves, sugarcane, wild grass, rice husk, etc.

The paddy straw must be carefully selected. It should be brittle, yellow or golden brown in colour and not older than 6 months. The straw should be dried in the sun for several days, stored if necessary in an air-tight container and used within two months.

The ratio of paddy straw to mushroom spawn should be 1 kg "prepared" straw to 4% spawn.

Procedure: First the straw must be prepared. The straw should be cut to 3-5 cm pieces. It should then be filled in cloth bags and soaked in water (1 kg straw to 10 litres water) for 10 hours. The straw should be weighted down in the water so that no part of it remains above the level of water.

The next stage is pasteurization. Water must be boiled to a temperature of 80 to 85°C. When bubbles appear, the soaked straw, surrounded by the cloth bags, should be weighted down and fully immersed in water. The bubbles will disappear when the straw is immersed and then reappear. Thirty minutes after the reappearance of bubbles the straw should be removed. It should be drained of water and cooled at room temperature, then spread out on a clean surface and dried for two hours.

The moisture content of the straw should not exceed 60%. To judge the moisture content one should hold some straw between one's fingers and squeeze tightly. If only one drop of water comes out, then the moisture content is correct.

Polythene or polypropylene bags are now required to fill the straw into. The bags should be approximately 35 x 50 cm and should weigh 150 gms each. Before using them, they should be washed with savlon or dettol or formalin. Four strings should be tied together at one end which should be placed at the bottom of the bag. The four free ends must be held outside the bag. The bag can now be filled. First a 5 cm layer of straw should be put in and the straw pressed lightly against the bottom. Mushroom spawn should then be spread over it. Then another 10 cm layer of straw, over which the spawn should be spread and so on till one reaches the top of the bag. Finally it must be covered with a final 5 cm layer of straw, and the four pieces of string and the bag must be tied together. The bags can either be kept on the ground or hung in the room. Hanging them enables one to get at the mushrooms from the bottom of the bag easily.

The following day, 30 to 35 holes should be made in each bag with a sterile needle. The bags should be kept in darkness, with very little ventilation allowed to them, for 15 days. The

bags should then be moved to another room. Here they should get four hours of diffused light and cross ventilation. After one and a half days the substrate should be sprayed with water three times a day with a shower pointing upwards so that the water falls on the bags like rain. On the following day small mushrooms, the size of pinheads will appear. Two days later fully grown mushrooms will appear. The mushrooms should not be pulled out because the substrata will also be pulled out with it. Instead they should be cut or twisted and broken off from the base. If the substrata is dry the bag should be given a quick dip in water. Otherwise continue spraying with water. The second crop of mushrooms will reappear one week later. The process can be continued upto 4 times. Then one has to start afresh. This is because after 4 crops the substrata begin to attract disease and get contaminated.

Pests and Diseases: Mushrooms are easily attacked by pests and diseases and therefore require utmost care and good management. Of the two well known types of mushrooms, the button mushroom is more prone to disease whereas the oyster mushroom is hardier.

Insects which attack mushrooms are the Scearid fly, the Phosid fly, Spring Tails (small insects like grasshoppers) and mites. To prevent insects from attacking mushrooms it is best to keep the mushroom bags at least one foot above the ground. One can burn sulphur in the room before seeding the mushrooms. Citronella oil mixed with water can also be used for spraying on the bags. It is absolutely essential to maintain the highest standards of hygiene to prevent attack by insects.

Bacteria and nematodes are other causes for worry. Bacteria occur when there is too much humidity and this shows in a wet rot or a brown blotch. To avoid this problem it is essential to constantly monitor the humidity level and maintain it as required. To prevent the occurrence of nematodes, the substrata should be constantly changed—it should never be older than six months to one year. The straw must be carefully selected and should be disinfected thoroughly before use. 100 gms of potassium permanganate, or 20 ml of formalin should be sprayed on the bags if the disease should appear.

5

A TRIP TO KERALA

It was now the end of August and also the end of the heavy rains. I was eager to begin travelling out of Goa to visit the many places on my agenda. I had got fairly comfortable now with being on my own within Goa (where I could at least communicate in the same language with anyone I met) asking for directions, buying myself a meal and learning to handle small quantities of money. I therefore impatiently awaited my trip out of Goa.

Another reason for my wanting to travel was because I was fed up of my neighbours and friends constantly asking me what I was doing after my SSC and why I was not in college. Somehow they couldn't get used to the idea that I was enjoying myself learning the things I wanted to on my own, so I would be constantly badgered by queries. I thought that if I went away I would certainly escape all these queries.

It so happened that my father was attending a seminar on organic farming in Kottayam and as he would also be visiting some organic farms he thought it a good idea if I came along. The trip would take us to Kerala.

Dad and I left Goa on 30th August, 1995. The bus departed from Panaji bus stand at six a.m. and reached Mangalore the same day at four in the evening. En route we passed through Karwar, Ankola, Kumta, Honavar, Kundapur and Udupi. Mangalore happens to be my ancestral home. (My dad, though born and brought up in Mumbai and now living since marriage in Goa, is originally from Mangalore.) Although

we do not have an ancestral home any more we have lots of relatives in Mangalore city.

We stayed at my grand uncle's house which is very close to the bus-stand. It is a two storey building in the heart of Mangalore and my grand aunt Monica Mauxi lives there with her three sons, Reggie, Patrick and Lambert and their families in a sort of joint family set-up. My grand uncle J.S. Alvares who was a very well known Konkani writer passed away a few years ago. I was meeting my aunt and cousins almost for the first time.

After the introductions were over and we had had tea and snacks Dad showed me around the city. Since I knew that I would be returning to Goa alone at the end of the seminar in Kottayam I took care to be very observant about landmarks and other details so that I would not get lost on my return trip. I carefully noted the locations of the railway station, Hampankatta, which is the centre of Mangalore and the old bus stand and the route to Aunt Monica's home. We returned at dark to a splendid meal and went to bed early for we had to wake up at 3 a.m. for our onward journey.

Our train left Mangalore on the dot at 4.15 a.m. We travelled all day through green countryside, passing through Kannur, Calicut, Thrissur and Ernakulam to reach our destination Kottayam at 3.45 p.m. We were booked at Hotel Aishwarya. I had a refreshing bath and then as usual we went off to explore the city but had to return soon because it started to rain.

The seminar was at Hotel Green Park and we set out for the venue early in the morning. We had already been registered as participants and each of us was given a cloth bag, notebook and pen to use during the seminar. There were many stalls selling a large number of items from organic tea and pickles, to books and manuals.

We looked around very briefly for the organisers were already calling out to everyone to settle down for the inaugural. All day there were talks, most of them by scientists. The sessions continued till evening with a break for a vegetarian lunch in between. Of all the talks, the one that caught my attention was the talk given by Dr Sultan Ismail on earthworms. I have refrained from giving details of Dr Ismail's talk here because I have a full chapter on my association with his work later in this book.

The next morning the same sort of programme continued. However there was a farmer's session which was chaired by my father. Many farmers spoke about their experience in organic farming. I found it quite interesting.

Trekking in the Wynad Forest

Sometime after lunch my father and I, along with Guru Rishi Prabhakar (the founder of the Siddha Samadhi Yoga programme) and Kartikeyan (who was researching some chapters for a source book on organic farming) left to visit the farm of an organic farmer, a Mr. K.T. Thomas. He showed us his shrimp pond, rubber plantations, cows, fishing ponds, orchids, giant bamboo filter ponds, etc. His farm was really huge, dark and damp—like a forest in the night!

Next morning we took a train to Calicut. We passed through Ernakulam and Trishur. At Shoranur we changed trains and from the railway station we took a bus to Sultan's Battery where we spent the night at a hotel called the Resort. As usual, we spent enjoyable hours walking around the town.

The next programme was at Wynad. Here, another meeting of persons interested in organic farming was taking place. We stayed at the Wynad Wildlife Division Guest House.

The group here was not very large and they generally had small intense discussions. I was not much interested in the sessions and wandered about as I pleased. But I liked the company of the people there very much for all of them were very knowledgeable and they were the active type too. Some of them—like Bernard from Auroville, Korah Mathen and his daughter Nidhi from Ahmedabad and Omkar—I would meet again during my sabbatical year.

We used to go for long walks in the forest, morning and evening. On the first day itself we saw Nilgiri Langurs and a variety of small birds, frogs and trees.

In the evening the organisers showed us two movies on the pollution of the river Bhavani. After that we watched a very popular and lovely movie called 'Animals are Beautiful People'.

On our early morning walk the following day (the second at Wynad) we saw a herd of spotted deer and a barking deer. We also saw many footprints of animals, especially of deer; and traces of elephant footprints too. The experience excited me very much and after that I would eagerly set out with whoever was interested in taking a walk.

On the third day, a Mr Shivanand gave a very interesting talk on the Western Ghats. He showed us many slides on the Western Ghats i.e. insectivorous plants, mountain goats, rivers that are formed by condensation of water vapour, plants that flower every ten years, etc. All that I had studied in geography and science in school now came alive for me.

That evening we watched two movies, one called 'The Whistling Hunters' (about wild dogs) and another called 'The Lord of the Jungle' (about elephants). Both were very good. The next morning we went walking again and saw only birds. We walked about 12 kms that day. Later that morning the concluding session of the programme was held.

In the evening the forest department organised a tour for us through the jungle. We walked quite a distance, saw the watchtower, then deer and a wild boar, but we had to turn back soon because we saw tiger footprints. At night we saw another two movies, one on the Narmada called 'A Valley Rises' and the second called 'The Silent Valley'.

After the meeting ended my dad was scheduled to go to Chennai for some work but I was to return to Goa on my own. My dad came along with me by bus to Calicut. At the railway station, my father bought me a ticket to Mangalore and left me at the station at about 2 p.m. to await the train which was due at around 4 p.m.

It was the first time I was travelling alone and I was quite nervous. Although it would be two hours before the train arrived I dared not fall asleep. I had with me a small battery operated video game and I occupied myself with this while waiting for the train to arrive. When it did there was a general commotion as people started rushing into the compartments. I enquired with one or two persons whether there were any special seats but nobody was really willing to pay attention so I just found myself a nice spot and settled down. The train started soon thereafter.

I stayed fully alert during the entire journey, keeping a watch on my things (I carried a haversack and a sleeping bag, both new) and having heard about pickpockets and other thieves I wanted to be doubly careful. I did not get down at

any of the railway stations as I was not sure how long the train would stop. So I contented myself with eating the fruit that Dad had bought for me at the Calicut station.

The train arrived in Mangalore at 9 p.m. From the station I took a rickshaw to my grand aunt's house for which I paid thirty rupees. This was quite a lot of money, but since it was night-time and since I was not perfectly confident of the route I did not bother to argue with the rickshaw-wallah.

My aunt and family were pleased to see me and urged me to stay on for a few days. But I knew that my mother would be anxiously awaiting my return, and not wanting to be irresponsible, I decided to return as planned the next day itself.

In the morning my cousin Reggie took me on his scooter to the bus station where we saw a bus about to depart for Goa. I jumped in and managed to get the last empty seat. The bus reached Panaji at 5 p.m. From there I took the local bus to Mapusa. Only when the bus reached the Mapusa bus terminus was I finally on familiar territory. I looked around at the familiar street dogs and hawker stands and then hailed a motorcycle taxi to take me home, which was a short distance of 3 kms.

Back home I proudly walked up to my mum who was smiling a welcome, my brothers punching me, my dog licking me—all so far away from the world of elephants and tiger footprints.

6

SNAKES ALIVE!

It took several letters and phone calls from my dad to establish contact with Mr Neelimkumar Khaire, Director of the Snake Park in Pune till finally the green signal was given and I was all set to visit the place. As the arrangements were not absolutely "pucca" my dad decided to come along with me to Pune, which is what we did on the 3rd of October, soon after he returned from Chennai.

We left Goa by bus and arrived at Pune early the next morning. Two of my parents' very good friends, Sujit and Vidya Patwardhan, live in Pune. Our entire family, dad, mum, my two brothers and I, had holidayed at their place a year earlier. That was when I had my first glimpse of the Pune Snake Park and the idea of my one year sabbatical took root. (Later, I was surprised to learn from Bany, their daughter, who I became good friends with, that her elder sister Lara and her friend had taken a sabbatical several years ago on completing school and they had toured the countryside looking at alternative methods of education.) So it was to the Patwardhan residence at Ganeshkhind Road that we first went and after a wash and a brief rest we set off for the Park.

The Director Mr Khaire was not in, but the Assistant Director Mr Rajan Shirke was aware of my visit and assured my father that once Mr Khaire arrived he would make arrangements for my food and stay. Until then I could spend all day at the Park but would have to go back to Sujit's house for the night. My father had no option but to leave it that way for Mr Khaire was expected to return only after three days. Dad

then left me at the Park and proceeded to Mumbai. For the first few days therefore I journeyed back and forth from Sujit's house.

Sujit's home is at Ganeshkhind while the snake park is at Katraj, a good 20 kms away. I remember how I got lost on the first day. My Dad had shown me the bus stand in the morning and given me the bus number. In the evening, one of the staff dropped me off at the bus stand where I waited and waited for the bus, which never arrived. I asked the people around but their answers were either "it will come" or "the frequency of that bus may be low".

Soon it started raining and since that bus-stand had no shelter in sight I had to stand in the rain and get wet. While I tried as much as possible to take shelter under the note book I carried, I was surprised to see a number of children, who didn't seem to mind the rain, walking coolly past me as if there were no rain at all! By seven in the evening, I was soaked to the skin. My feet were numb and it was getting dark. My first day at the snake park and what an experience!

Anyway, I crossed the road and walked to a telephone booth. While I was phoning Sujit the electricity went off. Sujit kept trying to explain to me how to come home by another route. I took out my half wet note book and scribbled "Deccan Gymkhana" and "Simbla Office". I managed to get a bus to Deccan Gymkhana (there are several buses which take you there) and from Simbla office I took a rickshaw and after going round in circles for sometime, I managed to find Sujit's house. How I wished I had my trusty bicycle instead of having to depend on buses and rickshaws!

During the first two days at the park I only scribbled notes and watched the workers. I tried to make friends with the workers and as a result I was allowed to handle one trinket snake. On the third day Mr Khaire arrived and immediately made arrangements for me to stay at the Park in spite of the Park not having accommodation facilities. Several students came there now and then to work for short stretches of time but they all had their residences in Pune and went home in the evenings.

Mr. Khaire is very popular among the workers and is affectionately called "Anna" ("big brother" in Marathi) by one and all. He always wears a glove and long sleeved shirt as he lost his left hand to a Russell's viper bite several years ago. Still, his love for the reptile world and his enthusiasm for snakes has not diminished one bit.

The Snake Park is quite large and has several snake pits housing various types of reptiles. In the centre is the administrative building which is a one storey cottage having on the ground floor a small office which doubles up as reception area, a room which holds the display exhibits like the king cobra, python etc., a store room and a toilet. On the first floor is a large room with two beds. It is here that I began to stay, with the watchman as company for the night. Anna installed a small T.V. in the room and also had a phone extension made to my room. He told me that I was welcome to come over to his place anytime, to eat or even to stay. However, I preferred being at the park.

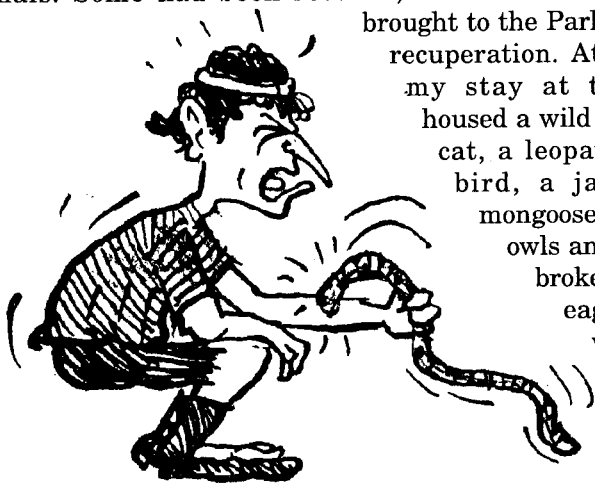
In addition to Anna and Shirke there were about 8 to 10 staff at the park. Some of those I got to know very well included Mahesh, Milind, Bhushan and Baba, the watchman. Many of the boys were studying at night school and working here during the day. On Sundays and holidays there would sometimes be extra students to lend a hand. All of them lived in Pune and would go home for the night. However now and again some of them would stay the night with me and we would watch T.V. or they would tell me tales. I also wrote my daily diary every evening after dinner, and sometimes read a bit.

My work at the park was to help the workers with their jobs for that was the only way for me to learn about snakes. So everyday I would clean the starback tortoise pit, the turkey pit, the chicken pits and later on the ratsnake pit, the chequered keel back pit and the monitor lizard pit. I also assisted with feeding the snakes, which is usually done once a week. Most of the snakes are fed small rats—the white mice come from the laboratory—and frogs while the python gets a chicken every week.

I was also taught the proper way of holding and handling snakes. On the third day, I was bitten by a wolf snake. Now you must understand that this is a non-poisonous snake and it was deliberately allowed to bite me for my experience and to enable me to get over the irrational fear of snake bites that all of us have acquired as a result of grandmother's tales being dinned into us from childhood. In my case even though I liked snakes, still, Anna explained, there will be a subconscious residual fear! This bite was not particularly painful and treatment was like any other wound one might receive.

During my stay at the snake park I was bitten on several occasions by a variety of non-poisonous (but hot-tempered) snakes and when I left after 3 weeks I had at least about 15-20 bites on my arms. Some of the bites were quite painful and one was so bad that my wrist had swelled up and I couldn't wear my watch for quite sometime. However when you remember that the snake gets damaged much more than you—it loses quite a few of its teeth in the bite—then you don't feel too bad. At any rate there was no question of using anti-venom as the snakes were all non-poisonous. And I learnt to think of the bites as injuries and wounds rather than the much feared 'snake-bite'.

Besides snakes, the Park also has a number of other animals. Some had been rescued, others found injured and brought to the Park for rest and recuperation. At the time of my stay at the Park it housed a wild boar, a civet-cat, a leopard, a Shikra bird, a jackal, three mongooses and several owls and eagles with broken wings. The eagles and owls were in cages with the top end kept open.

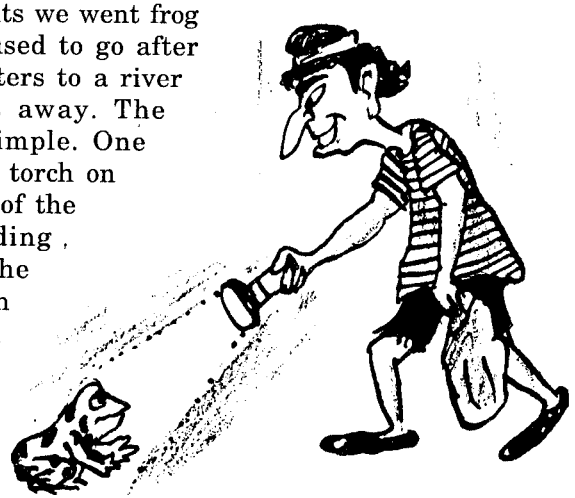


Once they were able to fly again they could fly out if they wished. There were also many types of exotic fowls, guinea pigs, white mice, rabbits, monkeys and a pair of turkeys. And of course there were Ganges soft shell turtles, starback tortoises and melanac turtles. All these animals had to be fed daily and their cages cleaned regularly.

The snake park has a system through which people in Pune city can call up the park if they sight a snake. Someone from the park will then go to the site with the caller, after taking directions from him/her, and try to get the snake. This ensures that people do not unnecessarily kill snakes. It was on two such occasions that I went with the boys on "calls" and returned without a snake. You see when the distance that the rescue team has to travel is long, the snake may not necessarily remain in the same spot till it gets there.

The snake park has a lot of visitors daily and people are always looking for someone knowledgeable to answer questions. I used to feel quite proud to do this and would gladly answer all the queries like, "What is the name of the snake?" "What does it eat?" "Which is the male and the female?" and so on. At other times I would be pestering the staff to answer more complicated and detailed questions about the habits of snakes. Workers are a mine of information and all of it is knowledge gained from practical experience.

Some nights we went frog catching. We used to go after dinner on scooters to a river about 10 kms away. The method was simple. One person shone a torch on the wet banks of the riverbed, blinding the vision of the frog, which would stop dead in its tracks, while another nabbed it with his



bare hands from behind. (Frogs must be taken alive or else the snakes won't eat them.) It was easy to catch the frogs as they remain quite still for the few seconds it takes to catch them, the difficult part being only to ensure that once caught they do not slip out of your grasp, for frogs are quite wet and slippery. After two to three hours we would return with 25 to 30 frogs in our sack.

I used to have my food at a small shack where some poor people cooked meals mainly for the Snake Park staff. One of the popular items was something called '*shample*' which was made of vegetables and had lots of oil floating over it. This was served with bread and it was deep red in colour and very spicy. After a couple of days of eating this delicious food, I had a very bad stomach and I had to go to the toilet seven times that day. That was the end of *shample*. I decided to stick to dal and chappaties, and cheap creamrolls.

The bathroom of the snake park looked very dirty and I usually avoided having a bath. I would wet my long hair and pretend that I had had a bath. When the Snake Park staff found out about this they decided to give me a bath. One day they caught me and stripped me of all my clothes, then they dragged me to the bathroom and, using detergent and a little bit of Harpic, they scrubbed me with the toilet brush.

Somehow these chaps also came to know that I was afraid of the dark and all night sounds. So they kept telling me ghost stories which despite my fears I liked to hear. Finally, on the last night I even met this "real" ghost. It happened this way. Three of us, together with the watchman were watching TV when Bhushan, one of the boys said he had to go on a "call". Shortly thereafter the lights went off and a sound like a cat mewing was heard. Baba, the watchman didn't seem to care but the other boy Popea and I were terrified. Next a light appeared at the window and the door started banging. A voice *(in Marathi)* thundered, "close the window". All sorts of strange things kept happening one after another. A skull with bones was floating in the air outside the window and when we went out, cautiously, to see who was there we found no one. Returning to the room we found my bedding thrown around

and my clothes and the whole room in a mess. The door frame shook, the windows rattled and I held on tight to the watchman's hand. I remembered being told that if one makes the sign of the cross the "ghost" will disappear, and so I did that, but it didn't work. This ghost apparently did not know the rules. Then suddenly we received a phone call from Bhushan saying that he was on his way back, and strangely, with Bhushan's return, the ghost had done the disappearing act. Nothing more was heard from the ghost after that. The next day when I told Anna and the others about this night-time visitor they all had a good laugh.

During my stay at the park I learnt how to handle almost all the non-poisonous snakes except the pythons. I also learnt how to handle monitor lizards, catch geckos and eat earthworms. Eating earthworms was not part of my diet or training, but once I saw Mr Shirke toss one into his mouth after being challenged to do so by one of the boys. I thought of trying this out and though I felt nauseated the first time I took a bite. I was okay the second time, for earthworms taste crunchy, like raw cucumber, not slimy and wet as they look.

On my last day at the Park, I was allowed to handle a cobra. I held a stick under the neck of the cobra and then lifted it by its tail. I did this about 2-3 times after which the cobra was put back in its box. I was so excited and happy. It was a perfect ending to my stay at the Snake Park.

As I write this I think about my other previous experiences with snakes. Like the story my mum tells about the time when I was only a few months old, sleeping one afternoon in my cradle at our home in Valpoi. She had heard a soft thud and to her utter horror she saw a thin bluish green snake which had obviously dropped from the roof making loops all over and around the cradle. Snakes are not unusual in the countryside and RUSTIC Farm was no exception. Mum says she was terrified but dared not make a sound for I was sleeping soundly and the cradle was covered with a mosquito net, outside of which the snake leapt around. It was less than a minute before it bounded onto the chairs and was out of the window and she rushed to reassure herself that I was safe

which I very much was. From her description I know now that it was a green whip snake, a very delicate and absolutely harmless snake.

Another time as a toddler, Mum says, I was playing with some old cartons and boxes at the farm when out leapt a snake from one of them. To my parents' astonishment, instead of crying out in fear as one might expect a child to do, I promptly went on my hands and knees crawling towards it as fast as I could, reaching out and trying to catch it.

In fact, as mum tells it, I seem to have deliberately gone out of my way to befriend snakes as a child. I would be afraid of dogs, for, as I would say, they had teeth and could bite, but snakes didn't appear to have any and for that reason perhaps remained my best friends.

Field Work Notes:

SNAKES

There are around 2500 species of snakes in the world. Of these, only about 15% are poisonous. The maximum number of species of poisonous snakes is found in Australia (90% of the snakes are poisonous).

238 species of snakes are found in India. Of these, 72 are poisonous. But only few can cause serious or fatal bites. For example, Pit Vipers are poisonous but rarely prove fatal to human beings. The poisonous Big Four are (1) the Cobra, (2) the Krait, (3) the Russel's Viper, and (4) the Saw-Scaled Viper. Of these the most poisonous is the common Krait. Its venom is about four times more toxic than that of the Cobra.

All sea-snakes are poisonous. The most poisonous snakes in the world include some sea-snakes which have venom 5 times more toxic than the Cobra. But sea-snakes will bite only when severely provoked and are never known to attack swimmers in water.

Snakes are cold-blooded; their eyesight is very poorly developed and they have no eyelids. They are deaf and can only respond to vibrations. They taste, feel and smell with their forked tongue. These senses are very well developed and enable them to differentiate between living and dead creatures, prey or enemy.

Some poisonous snakes inject venom into their prey, release the prey and then track it down with their tongue after the venom has done its job of killing it. The venom contains digestive enzymes that start digesting the prey from the inside.

Snakes grow rapidly till they mature and then continue to grow very slowly till their death. As they grow, they outgrow their skin so they moult the old one after a new skin has formed under it. The snake splits the old skin at the nose and literally crawls out of the old skin. During moulting, the snake stops eating but becomes aggressive.

A bite from a poisonous snake affects either the nervous system (neurotoxic) or the blood vessels (hemotoxic) of human beings. The only cure against snake bite is snake anti-venom. It is made by injecting very small doses of raw venom (about one-tenth of the fatal dose) into a horse and then gradually increasing the dose, making the horse immune to snake venom. The blood of the horse is then drawn, frozen and processed after separating the antibodies and crystallized into a powder. This is anti-venom as we know it.

When a snake bite occurs, the following first aid measures should be taken. Panic should be avoided and the patient should be kept warm and reassured. The wound should be checked to see if it is a poisonous or non poisonous bite. A poisonous bite will have two big fang marks, a non poisonous bite will have many teeth marks.

If the bite is poisonous, the patient should first be immobilized. No alcohol, tea, coffee or other stimulants, nor even painkillers should be given.

The wound should not be washed or cut or the poison swabbed out as this could cause infection and loss of blood. A tight tourniquet can be tied a little above the wound, such that one finger should be able to pass under the tourniquet. The patient should be transported as quickly as possible to the nearest hospital. The tourniquet should be left in place until antivenom is given. But it should be released for 10 seconds every 90 seconds and should not be used for more than six hours. At the hospital antivenom will be given which rapidly subdues the effects of the venom.

To avoid snakes, the following precautions must be taken. Rubbish around the house should be cleared. Rat holes should be filled and rats should be prevented from breeding in and around the house. Long tree branches touching the houses and creepers trailing the porches and window panes should be cut. Good boots should be used while walking through forested area. Avoid stepping over any obstacle when the other side is not visible and use a torch while moving outside the house at night.

7

A VACATION WITHIN A VACATION

My stay at the Pune Snake Park was to be for about three weeks but I was enjoying the experience so much that I was reluctant to return home. To my good fortune the family decided to spend the Diwali vacation holidaying in Rajasthan and since it was necessary to travel to Mumbai to catch the onward train north, I persuaded my parents that I would come to Mumbai directly from Pune where I would meet them at my grandparents' house in Girgaum. So I got myself a few extra days at the Park and another experience of finding my way around, this time in the big city of Mumbai.

Sujit bought me a bus ticket to Mumbai and dropped me off at the bus station as well. I had earlier received elaborate instructions on the phone from my dad on how I was to get to Girgaum once I got off the bus at Dadar and backup information from my nervous Mum on what I should do in case I got lost. I later learnt that my uncle and family were also put on alert to receive a call from their nephew in distress, which did not happen for I was determined to find my way on my own, and I succeeded in doing so.

The bus left Pune at around 10 a.m. and arrived in Mumbai a little after 2 p.m. I took a taxi, gave the driver the address and watched carefully as the taxi sped away down unfamiliar streets. I could barely recognise the place where the driver dropped me off but I asked around and after wandering about for around 20 minutes, found myself suddenly at the doorstep of the familiar 47/C Khotachiwadi, my paternal grandparents' house. My aunt and uncle were expecting me

and so were my favourite cousins, Lucano and Ricardo. An hour later came my parents' anxious call from Goa to find out if I had reached safely. By then I was already in my shorts watching a movie on TV with my cousins.

The next few weeks were strictly not part of my sabbatical programme for it was a holiday along with my family, with snakes and frogs and fish left far behind. Our holiday included a brief visit to Ahmedabad where we stayed with Korah and Sue Mathen. I had met Korah and his daughter Nidhi a few months earlier at the organic farmers' meeting in Wynad. On knowing that there was a snake park in Ahmedabad we simply had to visit the place, just to satisfy my curiosity. At the park, we found pythons, Russel's vipers, kraits, chequered keelbacks, boas, ratsnakes and a king cobra, all in glass cages. The park also had starback tortoises, monitor lizards, ducks and geese of various kinds, monkeys and other small animals. There was also a small aquarium, kept very poorly. I don't know whether the whole setup was run down because of lack of funds or lack of interest.

From Ahmedabad we went by train to Jaipur where we spent the next eight days at the home of Srilata and Mahendra Chowdhury. Although our base was Jaipur we visited and stayed two nights at a real fort, on the outskirts of Jaipur. It was my first visit to a fort and it was quite an experience living high up in the residential part of the fort with its cool rooms, some large, others tiny, some corridors so narrow and so low one had to bend one's head to walk through. The time of our visit coincided with the famous solar eclipse which was the talk of the town but I was disappointed with the eclipse as it darkened only briefly before returning to normal again. My friends told me later that the TV experience was far more wonderful.

In Jaipur we went sightseeing almost everyday, visiting forts, palaces and shopping bazaars, and had delicious kulfi and lassi in mud pots, and mouth-watering chicken tandoori. We drove down to Udaipur, where we went boating on the famous lake, saw some more palaces and then to Srilata and Mahendra's second home in Ghantali where we swam in the river behind the house and fished with the village boys.

Taking a taxi all by myself in Mumbai

The vacation ended with a 3 hour bus journey to Ratlam station, from where my brothers and I returned to Mumbai with my mum while my dad went on to Delhi. This time we stayed at my maternal grandparents' place in Mahim. My grandfather, a sprightly 86 year old and a very active gentleman, was there to greet us. It happened to be his birthday and he decided to take us all out to dinner to a Chinese restaurant not very far away from the house. I recall we were all dressed and ready to go when Mum asked Grandpapa how we were going to the restaurant. To which he said: "You and the boys take a taxi, but I will walk. I prefer to walk." I was quite astonished. Of course, we all decided instead to walk to the restaurant, with Grandpapa briskly leading the way, and had an enjoyable birthday dinner.

My mum and my two younger brothers, Sameer and Milind returned to Goa soon thereafter, but I stayed on with Grandpapa in Mumbai for a few more days, since I was to proceed from there directly to Chennai where I would spend the next two and a half months in the pleasant company of spiders, earthworms and my all-time favourites, crocodiles and snakes.

8

EARTHWORMS

On the 6th of November, I was put on the Chennai Express, which was to leave Dadar Railway station at 7 p.m., by my Uncle Alan who is very knowledgeable about trains since he has worked in the railways all his working life. My mum had requested him to check my departure from Mumbai since Dadar railway station is a crowded and busy place and I too was not confident of finding my way around. Earlier Grandpapa had brought me to the railway station by cab after making me double-check that I had my ticket, sufficient cash, little tidbits to eat and my water bottle filled for the long journey ahead.

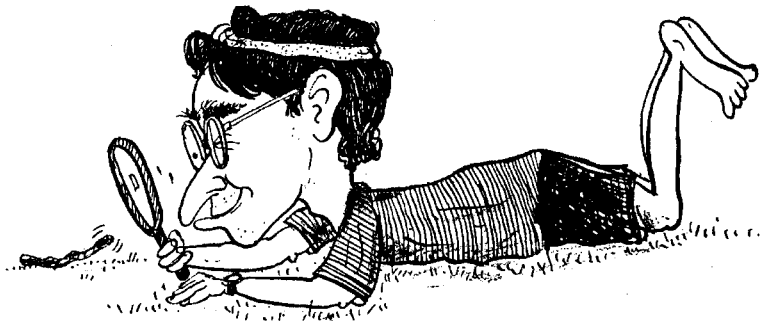
I was to spend one night and the whole of the next day in the train for it was due to arrive in Chennai at about 8.30 p.m. on the 7th. Having travelled on a couple of journeys by train during the past few months I was quite relaxed on this one although I continued to be watchful and careful of my things throughout.

The train journey from Mumbai was entirely uneventful. I had a window seat and slept the night on the lower berth. Around me was a family of migrant workers who spoke neither Hindi nor English and who were quite busy doing their own things. I did not speak with them nor with anyone else on the journey but contented myself with watching the countryside we passed through and the hustle and bustle at each station, and when I was bored I just went to sleep. I had about Rs.500 with me in cash and some of this was carefully tucked away in different pockets of my jeans, the balance in various compartments of the haversack. When I slept the haversack

was my pillow. I also carried a water bottle, some snacks and some fruit which was all I ate during the journey.

The train was delayed by 3 hours and it was well past 11.30 p.m. when it arrived at Chennai Central railway station. I was to be met at the station by my parents' long-time friend K. Manoharan. Uncle Mano and Aunty Sagu had willingly agreed to look after me during my stay in Chennai, even though both of them were not keeping good health. Not knowing where exactly Uncle Mano would be waiting I walked towards the entrance keeping a careful lookout for him. Yet, I failed to recognise him when I saw him for his hair was whiter than when I had seen him last. He recognised me, however, from the bright yellow haversack that I carried. He took me home in a rickshaw. I had some food there and went straight off to sleep. Uncle Mano suggested that I relax the next day, which I did, watching T.V., looking at photo albums and generally chatting with them about my sabbatical so far and about my plans in Chennai.

Early the following morning Uncle Mano and I set off for New College where Dr Sultan Ismail's Earthworm Institute is located and where I would spend the next fortnight studying earthworms and vermiculture. Actually I had a choice of studying at Dr Bhawalkar's centre in Pune or Dr Ismail's institute in Chennai. But I chose Chennai because I had heard Dr Ismail speak at the organic farmers' convention in Kottayam and had liked his talk very much. Another reason of course was that I was dying to get to the Crocodile Bank in Mamallapuram and being in Chennai which was close to the



Croc Bank was infinitely better than being far away in Pune where Dr Bhawalkar works.

Although Uncle Mano, being a heart patient, does not usually travel by bus, he deliberately took me by bus that morning so that I could get to know the route to New College. On the way he pointed out to me various landmarks which would help me know my way around, and gave me general bits of advice on how to travel in the city. I had to learn well and quickly, for language would be the main problem for me in this city where I spoke no Tamil.

At the College we met Dr Ismail who took us through the college campus down to the fields where the vermi-pits were and we saw the biogas plant, the garbage collection pits, the culture crates and the organic compost now ready for use. I was quite eager to begin and happy when "Sir" as everyone calls him, suggested I start work from the next day itself.

Every day, except Sundays, for the next 15 days I followed the same routine which was: wake up at 6 a.m or so, eat a hot breakfast of idlis, sambar, dosas, vadas or whatever was cooked for breakfast, carry a hot packed lunch which Aunty Sagu prepared for me and catch a bus by 7 a.m. from Ashok Pillar to Panagal where I had to change buses and get on one going to New College. Usually I would land up at the College by 8.30 a.m. or so and would be at the College till about 3.30 or 4 p.m., after which the journey would be reversed. These timings helped me to avoid the office rush both ways. My dad had suggested to Prof Ismail that I be given practical experience and so my programme included a mixture of study from books, taking down notes, watching and helping the others and finally making my own vermi-pits.

During the first two days I read up as much as I could about earthworms and the world they inhabit from books which were recommended to me by Dr Ismail. Later I started to observe the different types of earthworms, their movements, colour and other characteristics. I also learnt a lot about different types of soils, their textures and nature, and was taught how to take soil samples using the tulgren funnel.

There were about 8 to 10 students doing different kinds of research under Dr Ismail and all of us worked in a large room which was formerly the main library. Each one had a separate desk to work and when I came I was also given my own desk and chair. The big hall also had a mini library on earthworm related books at one end and it was a simple matter therefore to find the books I needed to read.

The main vermi-beds, compost pits and so on were on the ground floor but some of the vermi-beds which were in crates were stacked in the narrow corridor outside the study hall, where we also gathered to eat our lunch in the afternoons. Usually any one of the students would briefly guide me in the work that I was assigned for the day after which I would manage on my own.

During my fortnight stay at the Institute I learnt a lot about earthworm environments, including determination of porosity of soil, moisture content and texture. I also observed the other organisms present in the soil and took photos of microarthropods with the help of a compound microscope. At the end of the course, I practically prepared a vermi-bed and also ate a few earthworms and cockroaches for experience!

My stay in Chennai was not without its share of adventure. I recall that on my second day, I had entered a bus and rushed for an empty seat. I was completely unaware of the procedure, that while in Goa the ticket collector comes to you and sells you the ticket in the bus, in Chennai one has to go to the conductor (who is seated at the end of the bus) and buy the ticket. So while I waited for the conductor to come on his rounds two inspectors came up to me and caught me for not buying the ticket. One of them started shouting at me in a forceful stream of Tamil. After much action and hand waving, I explained that I did not know Tamil, that I was from Goa and it was the first time I was travelling in a bus in Chennai. He fined me Rs.25! Fortunately, I had enough money on me and paid the fine but when I got down from the bus, I found that my empty purse had also been pick-pocketed!

Another time I was on the last step of a bus which I thought would be quite okay for I had seen many people trav-

elling while hanging at the doors of crowded buses. However, as this bus started gathering speed I found it very difficult to hold on because the weight of so many people began to press against me and it felt like I was literally holding everyone in with my outstretched arms as I hung practically out of the door. I resolved never to travel on the footboard, if I could help it, again.

I also got lost several times. But I would never phone for help with directions but would struggle away, walking this side or that, asking passers-by till I reached familiar landmarks which would get me home. Often I found that I had alighted from the bus a few stops before or after my destination. On one such occasion the next stop was so far away that I jumped out of the bus while it slowed down at a traffic light and then spent nearly 30 minutes walking back!

Although Uncle Mano and Aunty Sagu had welcomed me very warmly. Looking back, I think I must have given them quite a headache during my stay at their house because of my rather careless and casual ways and the laid-back lifestyle I had acquired and was thoroughly enjoying. Uncle Mano would constantly be shouting at me for not having a bath regularly or for staying in the bathroom forever when I decided to have a bath or for wearing soiled clothes again instead of washing them.

Aunty Sagu cooks well and I enjoyed her food but both she and Uncle Mano would notice that I ate much more when there was chicken or fish for dinner rather than vegetarian food and I would get a lecture again for my poor appetite for simple food. I was also quite a sloppy fellow and would slouch around on the sofas after coming back from the college, channel surfing as I watched TV, which must have been quite exasperating for both of them. Anyway, they took very good care of me, not only in terms of feeding me but also going out of their way to make arrangements for me to study at the Earthworm Institute, the spider centre and later at the Crocodile Bank and I am most grateful for that. I hope when they read this book they will forgive me for all the trouble I must have caused them.

Extracts from Diary:

EARTHWORMS

10th November: Sir gave me a book on earthworms to read, then Jagan took me down to the field. There I was able to observe many organisms other than earthworms. We took a soil sample from one place and then went back to the lab where we put the soil sample into the tulgren funnel. I then went and brought three more samples from the vermi-tech pit. We then put these also into three other tulgren funnels. By then it was lunch time and we all ate together. After lunch I weighed the soil samples and got to see the organisms that were in the beaker under the tulgren funnel. At 3.30 p.m I left for home.

11th November: In the morning, I was given two types of earthworms i.e. *Lampito mauritii* and *Perionyx excavatus* and told to observe them. I spent the whole morning doing this. After lunch, I wrote down the observations that I had made. In the evening we went out to the College playground and also to the area near the College Boarding to make some observations. We dug two pits of 25 cm x 25 cm x 25 cm each at the playground and one, of the same size, at the Boarding. We made many observations which included the number and species of earthworms we found and whether they were clitellates or not. We also made observations regarding soil, atmospheric temperature and relative humidity and took soil samples to measure the moisture content.

12th November: Left for New College as usual. I was told that Sir did not come today as he had a high viral fever. Yesterday a research scholar had expired and so there was a condolence meeting today. After that everybody left as it was declared a holiday. I arrived home at about 10.30 a.m. I had a bath and then some food. I then watched a bit of TV and wrote my diary. In the night Uncle Mano and Aunty Sagu had invited some guests and had cooked chicken curry which I enjoyed very much.

14th November: Sir did not arrive today either. With the help of Jagan I used the Infrared Moisture Balance to find out the moisture content of the soil samples which we had taken on Saturday. After we finished one sample, the voltage started fluctuating so we used the tulgren funnel instead. Then Jagan sent me to get soil samples from the field and from the area near the Boarding. We put the soil samples in the tulgren funnel and observed the arthropods that fell into the beaker under a compound microscope. We also observed some preserved specimens of microarthropods.

15th November: Pounded 100 gms of soil sample and then sieved each soil sample through 5 sieves. Then weighed the soil in each sieve and noted this down.

16th November: Did sieving of soil in the morning. In the evening, used Keenscups to find out the waterholding capacity/porosity.

18th November: Sir arrived this morning. Read some books in the library for sometime. Then did a bit of soil sieving and then did burning of soil in a bunsen burner. In the afternoon, I watched a very comic film called "Junior Shylock".

19th November: Started preparing my report in rough. In the evening I went with Babu to buy a film roll for taking photographs for my report.

20th November: Did burning of a second sample of soil. After that Jagan, Sir and I photographed microarthropods with the help of the compound microscope that has a camera attached to it. After lunch, I attended a seminar conducted by one of the students.

21st November: Ate a *Perionyx excavatus* earthworm in the morning. Then weighed some soil samples to find out the waterholding capacity of different soils, weighed burnt soil, also learnt how to calculate and find out soil texture of different samples of soil. Continued writing my report.

22nd November: Sat and wrote the final parts of my report. Then I gave it to Chitra who corrected it. After she finished, she gave it to Sir who also made some corrections.

23rd November: Wrote my report in fair in the new notebook I had bought. Then Jagan and I stuck the photographs we had clicked earlier in the various spaces in the notebook. Then Sir said that I would have to prepare a vermi-bed on my own. He gave me a bucket and I made a vermi-bed in it. Sir checked that I had done it correctly.

24th November: Drew some diagrams that remained to be done in my notebook. Then gave it to Sir for final approval. He made me write a few lines about each photograph. He said I should come and collect it after a week or so. After that I said bye to everyone and left at 4.30 for home.

10 days later...

5th December: Today was a holiday, so I went to collect my report book from New College where I had given it to Sir for his signing. Met all my friends there. All of them wrote their remarks in my report book and then it was stamped. Sir gave me a certificate for the earthworm course I had finished at the Institute. Then Chitra dropped me in her Fiat car near the Panagal Park bus stop.

Field Notes on Vermiculture:

TURNING GARBAGE INTO GOLD

Vermicompost and vermiwash are the two earthworm products that have become very popular nowadays. Ordinary organic garbage which consists of litter, such as, kitchen waste and dead plant material is used and converted into manure with the help of earthworms.

Earthworms

There are three kinds of earthworms. One, the epigeal or surface earthworm (*Perionyx excavatus*) which eats only organic litter which is present on the top layer of the soil. Two, the anecic earthworms (*Lampito mauritii*) which are present in the upper layers of soil and feed on waste and leaf litter. The third kind are present deep inside the soil and are known as endogeic earthworms (*Octochaetona thriretonis*).

The most suitable earthworms recommended for vermiculture are the epigeic and anecic earthworms. *Perionyx excavatus* is purplish red and rough. Near the two ends the *Perionyx excavatus* is almost black in colour. It is smaller and thinner (approx. 10 cms long) and more active compared to the *Lampito mauritii*. They also breed faster than *Lampito mauritii*. *Lampito mauritii* are greyish white in colour and shiny, thicker and longer (length—16 cms) compared to *Perionyx excavatus*.

Earthworms prefer cool temperatures, moist soil, humidity, relatively less sunlight and neither too coarse nor too fine sand. These are the ideal conditions that must be kept in mind when using them for vermiculture. Since earthworms breathe through the skin, they perish if their skin becomes dry or the quantity of mucus diminishes. Hence to keep earthworms alive in the vermicompost containers, care should be taken to ensure that the vermibed remains moist. Earthworms however do not prefer waterlogged soils. In fact if earthworms are kept in water for too long, the concentration of ammonia that is discharged through their excreta makes the water too toxic for the earthworms to survive. Earthworms also cannot tolerate salt or salt water even briefly.

Earthworms are hermaphrodites. Depending on the species, their life span is between six months to one year. Fully matured earthworms upon mating shed their clitellum (a small band like an overgrowth of skin) and produce cocoons which take about 14 days to incubate and hatch into juveniles. Maximum three juveniles are hatched from each cocoon. From the juvenile to the clitellate stage i.e. the fully matured or reproductive stage it takes 15-18 days. Thus earthworms are able to multiply several times in their life span which makes them ideally suited to process even large quantities of garbage.

Vermicompost

A pit, a small plastic or wooden crate or, even a bucket, can be used for vermicomposting organic matter. Although not necessary, two crates can be used simultaneously; while one is being used for fresh garbage, the garbage in the other can be allowed to decompose.

First, 6-8 holes should be made (one at each corner and four in the middle of the crate). A pot or a bucket needs about 3-5 holes. The crate or pit must first be filled with a one inch layer of pebbles or broken bricks. Then, a half to one inch layer of sand should be spread. Over that, a five to six inch layer of soil should be spread. Then *Lampito mauritii* and *Perionyx excavatus* earthworms should be introduced. The soil must then be moistened with water. A little bit of cowdung (nitrogen) and some hay (carbon) should be spread on it, and the contents of the pit left for 20-30 days. This is called a vermibed. The cowdung and hay will allow the worms to multiply. With this, the vermicompost crate or pit will be ready for processing organic waste.

All organic waste should be evenly spread out on the vermibed. As far as possible add garbage in small quantities regularly rather than dumping large quantities at one go. The earthworm begins processing the garbage immediately. Water the container occasionally so that the vermibed remains moist. Once the container is full with organic waste, it should be covered with a little soil and allowed to decompose undisturbed. Only watering the pit should continue. After it has decomposed fully (roughly 45 days) watering must be stopped for about 3 to 5 days. This will force the earthworms to migrate down to the bottom of the container which will have some moisture as compared with the top soil. Then the top layer of soil which is really the organic matter which has been converted into manure should be removed without disturbing the vermibed. This organic manure can be used for plants.

Vermiwash

A drum, barrel or bucket can be used for making vermiwash. The drum or bucket should be placed on supports a little above the ground. A hole should be made at the bottom of the container. A pipe should be pushed through the hole and a tap attached to the outer end.

The bottom of the drum should be covered with a layer of gravel (about 6-8 inches). Over it, a layer of sand (6-8 inches), and then a layer of soil (6-8 inches) should be spread. The earthworms should then be introduced and the soil moist-

ened a little. Then a little bit of cowdung and hay should be mixed together and scattered over it. This should be left for a few days.

Whenever vermiwash is needed, water should be sprinkled with a shower or, gradually poured on top of it (5 litres of water for a 150 litres drum). The water will pass through the earthworm burrows and the organically rich soil will become liquid manure and can be collected at the bottom of the container. As the hay and cowdung is eaten up by the earthworms, this should gradually be replaced.

Conclusion

In nature, litter is decomposed in a way similar to what happens in a vermicompost pit. Litter (consisting of leaf material, twigs, bark, dead wood, flowers, fruits and other plant and animal material) that falls on the ground is constantly moistened by dew or rain. Decomposition then sets in with the help of microbes, fungi and microarthropods.

Microarthropods are of two kinds—the detritivores that feed on the litter attacked by the microbes and fungi and the predators that feed on the detritivores. The litter that has not been decomposed, dead microbes and microarthropods, along with their excretions and secretions, mix and form humus. This humus is in a complex form and therefore not available to the plants for use. Here is where earthworms come into the picture. The earthworms present in the soil feed on the humus. The castings (wormicasts) excreted by these earthworms, as a result, contain nutrients in a form that is readily available to the plants for their growth. The plants in turn, when they die or shed leaves, contribute to the litter which becomes food for microbes and fungi. Thus nature's cycle is made whole and complete.

Earthworms have proven that they are wonderful creatures for they can truly turn garbage into gold.

9

SPIDERS

My stint with vermiculture over, I had another fortnight of study with Dr K. Vijayalakshmi, whom my dad calls India's 'Spider Woman'. Dr Vijayalakshmi has been doing research on rearing spiders as a biological weapon for controlling cockroaches and her workplace is full of spiders of various types, all in bottles, and bred under her supervision. An authority on spiders, she is also the author of a well-known book on the subject.

Actually I had been anxiously waiting for a phone call from my parents saying that the decks were cleared for my Crocodile Bank visit. Instead Dad had phoned to say that the final arrangements for my stay at Croc Bank were still being finalised and that I could use the 10 days or so in between to learn what I could from Dr Vijayalakshmi about spiders, and the unusual use she intends to put them to. I had readily agreed.

Dr K. Vijayalakshmi and her husband both work in an organisation called the Centre for Indian Knowledge Systems (CIKS). CIKS is housed in a one storey building and Dr Vijayalakshmi's office is on the first floor. Here she studies various plants that are useful as pesticides and so on. But I was not at all concerned with that aspect of her work.

In the garage of the building was the Spider Room—a laboratory of sorts filled with bottles of different spiders in various stages of growth. There must have been over 500 transparent plastic bottles at the time I was there, each one neatly labelled, and all sitting one next to the other with spi-

ders in them. For air, each bottle had tiny pinholes in its lid. Feeding was done through another small hole in the lid: this hole was plugged with cotton. All these spiders and their activities including growth, moulting, mating and hatching of babies were monitored by Dr Vijayalakshmi. She had an assistant called Selvan and he followed her instructions, keeping the records and making the notings in a log book.

During the fortnight that I worked with Dr Vijayalakshmi, I simply slipped into this set-up, reading books about spiders that Dr Vijayalakshmi gave me, then learning to identify different spiders and simultaneously helping Selvan in all the tasks that were needed to maintain the huge spider population housed in the garage.

Spiders are friends rather than enemies

The spiders that Dr Vijayalakshmi deals with are called giant crab spiders. These spiders do not build webs. They feed only on cockroaches. The spiders were a little smaller than their prey i.e. the cockroaches. I used to separate the babies, feed them, check the moultings and catch flies for feeding them. I read a lot of books here and sometimes caught the spiders in the garden in order to identify and study them.

Spiders were not the only creatures housed in the garage. There were also cockroaches bred in buckets with rolled cardboard in the centre and broken biscuit pieces thrown in the bucket. The cockroaches were fed once a week or so to the giant crab spiders.

The smaller spiders used to get flies to eat and these were caught by us everyday from the garden. The flies have to be fed alive to the spiders, so we used transparent plastic bottles to trap the flies and once caught we would carefully put them into the spider's bottle. Sometimes the spider would immediately catch the prey and eat it; at other times the fly would buzz around in the bottle for days till the spider was ready to eat it.

Dr Vijayalakshmi also bred a particular species of fly in a small cage with fine mesh with a small saucer of milk in the centre as a medium for breeding.

Baby spiders were also housed individually in bottles and these were fed fly larvae or the larvae which come when maida or rava begins to lose its freshness.

The purpose of all these experiments was to find out which types of spiders were useful for using as pest control agents to deal with cockroaches. Information about spiders such as their growth, hardiness, their eating habits, reproduction etc. are important indicators of the species of spiders that can be kept in houses as predators for cockroaches.

Other than the spider work I tried to learn Tamil from Selvan but he was keen to learn English from me and so both of us failed in learning a new language and ended up speaking a cocktail of TamEnglish instead.

Extracts from Diary:

SPIDERS

26th November: Uncle Mano and I left for Dr Vijayalakshmi's office this morning at 7 a.m. While Uncle Mano and Madam chatted, I read some books. Madam then showed us her spider collection. She also introduced me to Selvan. Before we left she gave me some books to take home to read.

27th November: Watched how Selvan separated baby spiders from their mother, placing each baby in a separate container. There were about 110 babies. Then we fed about 200 older spider babies. Selvan showed me how to check their moulting.

28th November: Today I did feeding of the spider babies on my own. Then transferred adults from one container to another and then fed them.

29th November: Today did only feeding of spider babies. Madam did not come to the office as she was ill but her husband Dr Balasubramanian came to check on us instead. Read some books on spiders in the afternoon. Left early for home as Uncle Mano and Aunty Sagu were going away for a few days and I would be staying at their relative Santosh Kumar's place instead. They left at 7.30 p.m. and I waited at their neighbour's place for Santosh to collect me which he did at 9 p.m.

30th November: Being Sunday I got up late and ate idlis, dosas and sambar for breakfast. Wrote out my diary for the past 2 days and watched some TV. In the evening Santosh took me to the bus stand and explained the route I would have to take next morning to CIKS.

1st December: Madam came to the office today and showed me how to collect spiders which were in the compound of the office. She also gave me some more material to read on spiders and told me to start preparing my essay on spiders. After doing a little bit of feeding as usual, I went out on my own and collected few species of spiders. Then Madam helped

me identify them and also some other species of spiders that they had caught. Spent the afternoon catching flies to feed to some of the older spiders.

2nd December: Today I only did identifying of different species of spiders. I took some material home to read and so I left early; was so busy looking at the books I was carrying, I didn't notice the terminus where I was to get off and got over carried much further. Had to walk nearly half an hour back. Asked people for directions and finally reached the terminus.

3rd December: Did not feel well today so I didn't go to CIKS. Read the books I had brought at home. Started preparing my written report.

4th December: Today did feeding of spiders as usual. Then caught about 70 flies and fed them to the adult spiders. Put 2 spiders to mate and made my observations. Continued writing my report in the evening.

5th December: Went to New College to collect my vermiculture report.

6th December: Did feeding of baby spiders first. Then caught flies. A female spider's eggs had just hatched so Selvan and I did the separation of the babies into individual containers.

7th December: Did writing of my report first today. Then I gave it to Madam to correct. After she finished with it, I started writing it in fair. I finished writing the report before evening and left it with Madam for final approval.

8th December: Went to CIKS late as I had a bad stomach. I was given my final report signed and Madam also gave me a certificate. I left slightly early in the evening as I was still feeling unwell and was scheduled to leave for the Croc Bank the next day.

Field Work Notes:

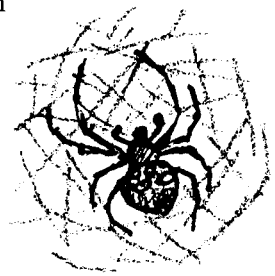
SPIDERS

These days most of us use Baygon or some other synthetic poison to control cockroaches and other pests. But what does this do? It only makes cockroaches or pests immune or resistant to such poisons. Moreover, synthetic chemicals are very harmful and pollute the environment. How nice it would be if we had a biological method of controlling of pests. But that's just what spiders are!

A spider is not an insect. Insects are made up of a head, thorax and an abdomen. They have compound eyes and are six-legged. They usually grow wings in certain stages of their life and possess feelers or antennae. Insects produce eggs which hatch into young that are completely different from their parents. The young ones usually grow through metamorphosis.

A spider on the other hand is an arthropod, made up of a cepolothorax joined to an abdomen. It does not grow wings at any stage of its life. It is eight-legged, and in place of the normal insect antennae it has pedipalps. A spider generally has eight simple eyes or it could have six eyes e.g. a spitting spider. Depending on the species the eyesight may be well or poorly developed. Some species, such as the cave spiders, are totally blind. Depending on the species a spider's life span ranges from a couple of months to more than a decade (e.g. mygalomorphs).

Almost all spiders have their first pair of appendages later modified into fangs with venom glands. But only a few have fangs that are large and strong enough to pierce human skin. Out of these, most cannot do any serious damage to human beings except for about four to five species which can be lethal.



The Black Widow spider, for example, which is found in South America is

the most poisonous of all spiders. The female of the species, whose poison is strong enough to kill a human being, often kills and eats the male after mating and is thus aptly named the Black Widow. This spider is shiny black in colour with a red hour glass mark on the ventricle side of the abdomen. Fortunately, there are no spiders in India which can seriously harm human beings.

There are about 30,000 species of spiders in the world. They have been found upto a height of 23,000 feet up Mount Everest as well as underwater.

Almost all spiders are carnivorous. They can eat insects, small birds, mammals and reptiles, including poisonous snakes and other spiders, which they first subdue with their poison. They inject their prey with a highly lethal venom and, having no teeth, suck out the liquid from inside their prey. Large spiders with longer and powerful jaws may eat part of or even the whole of their prey. Spiders can live without food from a few weeks upto three months, depending on species, size, and age. They obtain liquid from their food and thus do not need water.

Many spiders spin webs to capture their prey. However spiders also have other means of capturing their prey. Some spiders spit a sticky web onto their prey. Others live in burrows with trapdoors. Whenever they feel hungry they come out and catch an unsuspecting insect. One species attaches a sticky drop to one end of its silken thread and holds it with its first three pairs of legs. When an insect passes by, the spider waves the thread at the insect and ropes it in, as it were.

Some spiders sit on flowers and catch insects that come to collect nectar. Others spin a small web, hold it with their first few pairs of appendages and then throw it on insects passing below them. Still others feed on other spiders only and are called pirate spiders. A few spiders live on the webs of other spiders: they are too small to be eaten by their host. They eat the small prey that get caught in the web, thus keeping it tidy.

Spiders also have amazing defence mechanisms. Some spiders camouflage themselves as a bird dropping. Others, as

a dried yellow or black rotting leaf or twig. And yet others resemble ants which are often rejected by birds, reptiles and other insects. Some are even able to change colour and shape, to some extent, to match their surroundings. Some species build zigzag white coloured threads in their webs which are visible to birds who avoid flying through the webs and damaging them.

The male spider is smaller than the female, and is thus liable to be eaten by his mate. So, the male uses many tactics to prevent his being devoured by his mate. In some cases the male drums or pulls at the strings of the web in a special code to announce that he is not a prey or an enemy, but a sexual object.

Some spiders offer their mate a gift such as a juicy fly, wrapped in silk. But it may well be taken back after mating and offered to another female. Sometimes a male may even offer the female the empty husk of an insect. Sometimes the male loosely binds the female with silk to immobilize her before mating. Some species of male spiders may patiently wait near the web of a female spider for weeks until she has caught a prey, and then mate with her while she is busy feeding on the prey. Sometimes, the male is so small compared to the female that the female is practically unaware of him while mating and this gives him protection.

Most spiders are solitary in nature. Each one builds its own separate web. If one spider falls by mistake into another web, the bigger spider will eat the smaller spider. However, there are some spiders called social spiders that live together in one web. Sometimes there may be hundreds or even thousands of adults and young ones living in one web. Even if a single prey is caught (such as a small fly), all the spiders will share the meal.

Spiders multiply very rapidly. After mating, an egg sac is constructed and the internally fertilized eggs laid inside the egg sac which is carried by the female with her palps and fangs. Fertilization of eggs may be internal or external depending on the species. Within 15 to 20 days, 80% of the eggs hatch. (The eggs hatch into young spiderlings. The new born

spiders are similar to their parents, only smaller. The spiderlings moult to mature.) After a gap of one week to ten days the next batch of eggs is laid in a fresh egg sac, and fertilised with the help of stored sperm. The female can do this three to four times without mating with another male, although she will readily mate with a male after the laying of every batch of eggs.

Spiders have proven themselves to be one of the best biocontrollers of insect pests. Very few of us realize that spiders were, are and will be laying traps for insects even after man has finally disappeared from the earth.

HOW TO REAR SPIDERS

Spiders have cannibalistic tendencies, i.e. if two or more are kept in one container, they will prey on each other. Hence from birth, they must be separated into individual containers.

Transparent plastic containers (size depending on the individual species) can be used to rear spiders. A few pin-sized holes should be made in the lid of the container as aeration holes. One big hole should be made for dropping prey inside. It should be blocked with a piece of cotton.

Baby spiders will eat culture foods such as Thrypolium, drosophilia, fruit fly and house fly larvae. As they grow, they will eat house flies and later on cockroaches.

Cleaning the prey remains and moults is a must. Two containers should be used. Every week the used one should be washed with soap and water, and allowed to dry in the sun.

The legs of the stands on which the spider containers are kept should be placed in bowls of water or oil to avoid ants. The adults should be fed well before allowing them to mate. Spiders will tolerate moderate room temperature.

Culturing food

1. Milk powder and a medium sized piece of cotton, mixed with water. Every day, a teaspoon of milk powder should be added.

2. Drosophilia larvae culturing: quarter cup of wheat flour and two medium sized pieces of jaggery should be boiled in two cups of water.

Housefly and drosophilia can be reared in a wooden or metal framed box, covered with a fine mesh or netting. The above mixture should be put into small bowls and introduced into the cage. Adult houseflies and drosophilia should be captured and put inside the cage and left there to lay their eggs.

3. Thrypodium larvae: adults are found in rava and maida. A special bucket should be kept with an aeration hole and the maida or rava in the bucket, sprinkled with a little bit of water every day. A strainer can be used to strain out the larvae wherever necessary.

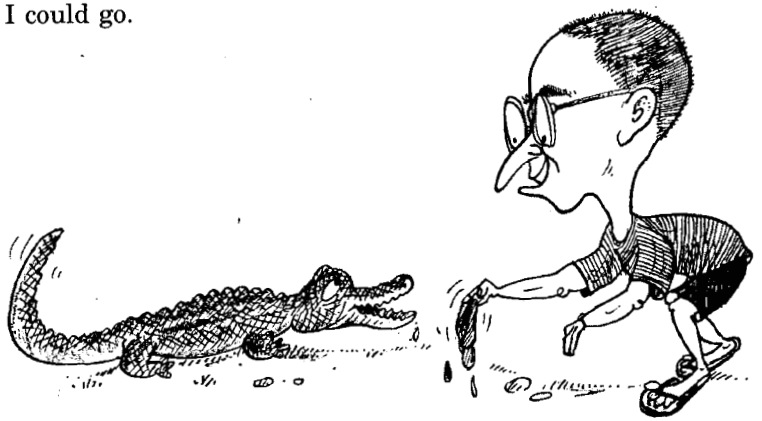
4. Cockroaches: need a bucket with many big aeration holes, covered with a fine mesh. A few rolls of paper can be placed vertically inside the box for the cockroaches to climb on.

10

CROCODILE DUNDEE

December was the most eagerly awaited month of my one year sabbatical. All decks had finally been cleared for my long awaited trip to the Crocodile Bank at Mamallapuram. Nearly three months earlier my dad had written to Romulus Whitaker the legendary snakeman who now runs the Croc Bank asking whether I could spend some time there. There had been no reply largely because Rom travels quite a bit but also because, as I discovered, writing replies to letters is about the last thing these animal-dedicated persons have time for.

I was in fact beginning to feel quite frustrated thinking that my trip would not work out when Srilata Swaminadhan (with whom we stayed in Jaipur) told my father that her sister lived at Mamallapuram and would help out. Phone calls back and forth and finally it was all organised. I was overjoyed when my dad's phone call came to Uncle Mano's house saying I could go.



Babu, Uncle Mano's nephew, reached me by bus to the Croc Bank on the 9th of December and I spent one glorious month there, the nearest I got to living in the wild. Although I was supposed to return home for Christmas I begged to be let off and was in the seventh heaven when my parents agreed. In fact I enjoyed my stay so much, that in March, I returned to the Croc Bank again (for a brief while), as that was the breeding season for crocodiles.

The Croc Bank is situated at Mamallapuram which is about 37 kms from Chennai. It is a huge place with a beach just behind it.

Croc Bank is home to thousands of crocodiles, all of them housed in pits of varying sizes with sloping walls to enable water to collect at the centre so that the crocs can sunbathe on the upper part of the slopes. Some of the huge crocodiles have individual pits but usually the species is kept separately, male and female further separated from each other. A large enclosure divided into several sections houses the baby crocs.

In addition to crocodiles, snakes also have a significant position at Croc Bank for snakes were Director Romulus Whitaker's first love, and he is still known as the Snakeman, having founded Madras Snake Park several years ago. There is, in fact, a big snake pit at the Croc Bank, in which various kinds of snakes are kept. Here, snake venom is extracted from the snakes by the Irulas. There is a separate fee for visitors for entering the snake area. While the poisonous snakes are kept in pots in a snake room, the King Cobras, of course, have special separate rooms.

Croc Bank also has enclosures and pits for various kinds of turtles and large aquariums with fish in them.

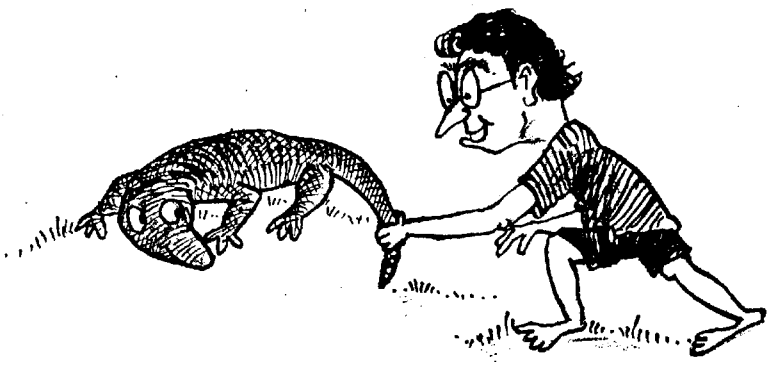
At one end of the campus is the library, well stocked with books and magazines on all these creatures. Adjacent to it are the residential quarters of researchers and guests (there were mainly foreigners at the time I was there) who come to stay at Croc Bank from time to time. The residential quarters are quite simple but comfortable. Each room has a bed, desk and table, and an attached bath and toilet. I occupied one of these rooms during my stay here.

The Irula families live in a separate area close to where the Snake pits are located. The permanent staff which includes the Director, Deputy Directory and others have their own individual houses located in various places within the Croc Bank.

During my stay I became good friends with many of the people at the Croc Bank including the six foot tall Director, Romulus Whitaker, whom everyone calls Rom; his wife, Zai Whitaker; their sons Samir and Nikhil; Harry Andrews, the Deputy Director who hails from Kerala; Romaine, his wife and their son Tharak, Gerry the snake-catcher from Bangalore and many others.

My stay at Croc bank was exciting throughout and I learnt a lot. For the first few days, I was given my first assignment i.e., treating a 2-foot long turtle with infected skin. I used to apply ointment to its feet and then put on some bandage. The next day, before repeating the treatment, I had to feed the turtle with cabbage in water.

From turtles, I moved to big lizards i.e. monitor lizards and Green Iguanas. The Green Iguana I handled was quite big—about the size of an average dachshund. His tail measured two to three times the length of his body if not more. From head to tail, he must have been about two and a half metres long. But he had been in captivity for so long that he was very friendly, though he had sharp claws and a spiny back and head. Sometimes, when I used to guide special guests around, I would take him out so that they could have a feel



of his sandpapery skin. I was surprised when Harry, the deputy director, told me the Iguana was as old as I was.

Sometimes, I also handled monitor lizards. They were very strong, had sharp claws and a very bad bite. Every time I jumped into the pit to handle them they would rush into the water. I soon learned to be quick enough, and would get them before they could reach the water. Once they were cornered they would whip their tails about and inflate their necks, hissing dangerously. Of course, you had a few of them running up trees and then you couldn't do anything about it. I soon discovered that though it looked scarier, it was easier to catch them in the water.

The croc bank is filled with pits. Each of these pits is an enclosure varying in size, depending on the size and type of reptile, and the number of them in it. Every pit has a pond of sorts filled with water for the reptiles to swim in or to drink. Most of the crocodile pits were bare, but the monitor lizard pits were usually filled with trees which they could climb to the highest branches. The branch ends were kept within the range of the pits so that the monitor lizards did not get out by trying to climb other trees or jumping out from the high branches.

The ponds of the monitor lizards were almost waist deep with dark murky water and you had to feel around until you touched the head, leg or body of the monitor (they are less likely to bite in water). Then I would feel around till I got the tail, slowly lift it to the surface and grab the neck under the water. Their necks were so huge that I could hardly get my fingers round them. On land, catching them by grabbing the tail was much faster, but one had to avoid the biting head by quickly grabbing the neck.

Once, when the Croc Bank staff wanted to get some monitors down from the trees, they just took a long stick and pushed them over from the height of almost a two storey building. They fell on the ground but suffered no damage and just continued running around. I recall the day Gerry challenged Nikhil "the bodybuilder" to pull a monitor lizard that was half out of a burrow. At first he thought the monitor's tail

would break but though he tugged with all his might his rippling muscles couldn't move an inch of the monitor.

In the mornings, I helped the workers clean the croc pits, a task which I thoroughly enjoyed. We would jump into the pits with big sticks and chase all the crocs into the water. Then we would clean out the croc shit and the left overs of their food which included a lot of bones. This exercise was usually done with a male worker first chasing the crocs into the water. Then the remaining 3 to 4 women would help with brooms, baskets and spades. Occasionally, we would have a crocodile wanting us to get out of his pit instead. No matter how hard you hit him on his nose he would chase you around until he would finally give in, so to speak, and dash into the water with a big splash or sometimes, glide gracefully to where he could join his friends who sometimes numbered a thousand! (The Croc Bank had around seven thousand crocs at the time I was there.)

I also had occasion to participate a few times in the operations involved in shifting crocodiles from one location to another. That was quite an adventure in itself!

One day Rom and Harry decided to shift the largest male Gharial in the Croc Bank from one pit to another as it had broken its upper jaw in a fight with another male during the previous breeding season.

Normally you try to catch a croc by throwing a sort of a small anchor in and when the croc latches on to it you try and pull it out. Once it is out, about 10-15 people quickly jump and sit on it. (That's the only way to prevent a croc from getting back into water!). With its mouth bound by rubber bands, the croc is then rolled onto a ladder, bound to it, lifted and carried to the pit that it has to be transferred to. An average adult croc is about 250 kg and about two to three metres long. It takes 15-20 people to carry it.

Once it is released in the pool the ropes and rubber bands are removed and the last unfortunate or brave man, depending on how you look at it, makes a run for his life over the edge of the pond onto the safety of dry land.

As we were transferring the male Gharial into a female mugger pit, Harry jokingly yelled: "What do you think we will

get—a Ghammer?" Of course crocs only mate with others of their own species and there is no way a Gharial and mugger will get together. We were in fact transferring the male here in order to give it a period of rest and recovery from fighting with other males.

Another time the exercise was because 'Jaws III' needed female company. Jaws III is the biggest captive salt water crocodile in India. He is about 16 feet and ranks may be, 3rd or 4th in the world in terms of his length. Therefore, after Part II of 'The Great White Man-eating Shark' was produced, called Jaws II, the Croc Bank rightly decided to name its crocodile 'Jaws III'.

Jaws III was a loner and would kill anything including other crocs which fell into his pit. So he lived a lonely, if majestic life. Whenever we jumped into his pit to clean it he would come charging at us even if he was in the water. He seemed to give us more exercise than all of us put together gave him. Anyway, the Croc Bank, after ten years, finally felt it was time to find a him bride. Since he had on more than one occasion bashed his head against a wall sensing a female in the opposite pit, we knew he was ready!

The first female we caught was about to be thrown into his pit when I asked to examine her. (I had just learnt how to sex them). I began to feel inside the crocodile and felt a hemipenis! "It's a male," I shouted. "Can't be," said Gerry, "let me check." After a few seconds there was a reassuring nod from Gerry: "Yes, Rom, it's a male!"

"Rahul, Champion Sexer," cried Gerry.

One cannot tell if crocs are male or female by their outward appearance. So, at the Croc Bank, after crocs grow to a certain length they are sexed and markings are made on their scales. But workers can sometimes make mistakes while sexing small crocs. That's perhaps how the error occurred with the first bride we got for Jaws. I can't imagine the plight of the poor chap had he been put in the pit with Jaws. He would have been turned into minced meat in minutes.

After that episode we physically examined every supposed female we caught to be doubly sure of not making any

error and found that most of the supposed females turned out to be males! By then, most of the crocs had run into the deepest part of the pond and we had hardly any crocs to choose a female from. Rom suggested chasing the females out of the water onto the land, but that's not easy at all. So he came up with another idea.

We got some iron gates and tied them together with a thick mesh net over it all. Then we had to wade into the green water with the net in front of us. This would effectively push the crocs from the deep water onto the land. But the best of plans can go haywire and, instead, the reverse started happening. The crocs from the land started coming into the water colliding with those being driven out by us. Thereafter there was general commotion in the water and all the crocs started thrashing about. One almost got my neighbour's hand. I could feel the crocs at my feet through the iron mesh that I held grimly onto. However we finally accomplished our dangerous mission and when we had driven a sufficient numbers onto the land we were able to select a female for Jaws.

Imagine Jaws' surprise when he saw a companion after all those years. She was exactly half his size in length and width. Perhaps he was just very excited or maybe it was due to a normal state of male aggression, we don't know, because he just caught the hapless female croc between his huge jaws and thrashed her about. "Croc barbecue is delicious", said Tharak expecting the poor creature to perish any moment. Fortunately or unfortunately, his wish was not fulfilled. The female survived although with quite a few bloody marks. Thereafter she kept her distance from the water as any sane creature would, avoiding Jaws like the plague.

Much later, when I visited Croc Bank a second time, it was the breeding season and there were a few nests to be excavated everyday. Each nest would occupy about the space of a medium size basket. Each egg was at least three times the size of a hen's egg and they usually numbered around 30 to 35. Every female—and each one of these measured from about 2 m to 3.5 m—would determinedly guard her nest, refusing to budge when we tried to chase her into the water in order to clean the pit.

There is now a problem of excess population of the mugger crocodiles at the Croc Bank partly because they breed twice as much at the croc bank compared to in the wild and also due to their high survival rate. In the wild, at the most, one or two survive out of the 30-35 eggs as many are lost to predators, etc., but here due to artificial incubation, special enclosures, etc., a large number tend to survive. Therefore the croc bank has stopped all breeding of this species which meant that we had a surfeit of eggs for breakfast! We used to scramble the salty eggs and finish them off with sauce, although a larger number used to be sent raw for the monitor lizards' breakfast.

I sometimes went snake hunting with the Irulas. The Irulas are tribals that are expert at snake catching. They formerly caught snakes for the snake skin industry. After the ban, they went out of business and found it difficult to make a living because they did not own land and did not know how to cultivate fields or do any trade at all. After the croc bank opened they were back in the business they excelled in, but this time it was to save people and snakes with snake venom extraction.

Carrying only a crowbar and a few cloth bags, they would set out, overturning every bush and digging any hole that showed signs of a snake in it. Their crowbar had three uses, namely: (1) to shine light into the burrow; (2) to dig the hole and (3) to handle the snake. During my outings with the dark, short, curly haired snake hunters, we caught striped keelbacks, ratsnakes and also black scorpions.

Apart from snakes the Irulas also caught rats. These rats, which destroy crops and fields, build their burrows within the bunds. After catching the rats, the Irulas would take away the rice which the rats had stowed away and cook it to eat with the field rat meat. These outings were long, hot and tiring but I found them nonetheless enjoyable.

The Irulas also taught me a lot about snake handling. I learnt to handle the four poisonous snakes of India (the "Big Four", i.e. Cobras, Common Kraits, Russel's Vipers, Saw-scaled Vipers) and also Pit Vipers and Pythons.

Snakes were kept in mud pots that were placed in the snake room (no different from an ordinary bedroom). Outside, a board merely announced: 'Danger: Snakes Loose'. This was done to discourage intruders. But really speaking, snakes were let loose only under supervision. There was a small canal of water outside to prevent ants from entering the room. (You may not believe it but ants can reduce a snake to a skeleton.) Next, there was a little space outside the room and about 1 to 2 metres after, a smooth wall, about a metre high. I used to remove the snakes from their pots, put them to drink water in the canal and then clean the pots. During this exercise I would take the opportunity to improve my skills at handling the snakes. Basically one has to hold the tail with one hand and control the snake using the snake hook (a long stick with an iron hook at the end) with the other.

Bites! That's practically the first question anyone asks me when I talk of my croc bank vacation. Did I get bitten? Yes, several times, mostly by accident. But sometimes I allowed myself to be bitten just for the heck of it. I recall once when a ratsnake gave me a bite on the nose. I tried to prevent Rom seeing it but he found out soon enough by the blood on my shirt. A bite from a ratsnake is not painful but it bleeds like a leaking tap. "Don't worry, Rahul," Rom said cheerfully, "the venom will not take effect for another half an hour." (Ratsnakes are non-poisonous.)

Another time I was getting a picture taken of myself with a baby crocodile when it turned round and bit me. That was quite bad! Imagine a sawing machine running over your hand. But I was cool, and happy that I had been bitten by a crocodile!

Then I was dumb enough to try the bite of a wall lizard that Gerry had caught to feed to his pit vipers. The scar, still on my hand, reminds me also of the chequered keelback bite I got in Pune (the one which got so bad that I couldn't wear my watch for a few days).

And on the last day of my stay at Croc Bank the red-eared turtle which I was taking away as my gift and souvenir from Croc Bank bit me so bad that I could see my flesh and I could barely use my hand for a few days.

Now when I look back I think I was collecting bites in much the same way that some people collect trophies. Although this may appear quite a foolish thing to do and perhaps it was too (some of the bites were quite painful), one good thing did come out of all those bites. I have no paranoid fear of such bites any longer. I am very careful when I handle reptiles and take all the precautions that I have been taught but I know that I would not be terror stricken should I get bitten and would know what remedial steps to take.

Apart from my practical studies, there was a huge library at the Croc Bank where I would browse through several books on crocs, snakes, monitors, turtles, the works. It was always with great pleasure that I would search for information about something that I had learnt or seen that day. And the best part is that although I didn't have to memorize the facts for any examination, nothing of what I read has gone out of my head.

And then, there was always time for fun. Sometimes I would go to Harry's house where Tharaq and I played music or recorded songs. Other times, I would watch a movie at Rom's. There was time for barbecues of field rats, froglegs, frankfurters, parrot fish, chicken and beef, rounded off with chocolate cake. The beach at the back was for swimming during the day and catching crabs during the night.

One of the interesting happenings at the time that I was there was the arrival of a film team from the magazine *National Geographic* to film the King Cobras at the Bank. I became one of the many hands-on they had for the job: I would assist in various ways like holding the flash, helping with the setting up of shots, catching and re-catching the frogs as they scampered off during the numerous retakes.

One lazy afternoon Tharaq suggested a haircut for me. My hair was by then really long. In fact I had not put a scissor to it since the beginning of my sabbatical. So now it stood nearly at shoulder length. He told me he had one and a half months' experience in hair cutting. I was thus persuaded to take up his offer of a "free" haircut in the "latest style".

I explained in great detail to Tharaq how I wanted it cut and he nodded attentively making a few suggestions here and there. Then he started to work with the scissors, cutting and shaving here and there. When he announced that he had finished he produced a mirror and I looked into the face of an unrecognisable Rahul with a hairstyle of triangles sitting amidst shaved parts and a long strand of hair in the front. I looked crazier than any rock star! It was only then that I learnt that Tharaq did not know the ABC of haircutting, much less hairstyling and that he had just had a great time experimenting on my head.

Anyway I decided that now was a good time to try out the "bald look" and so I got to a proper barber and had my hair shaved off completely. It was truly liberating. I took several pictures of myself at this time with the reptiles at the croc bank to remember my days here and also to record for posterity my new look.

I felt truly sorry when it was time for me to leave Croc Bank. I promised everyone that I'd be back soon. I carried a souvenir with me—a red-eared turtle (which I still have) and some turtle eggs.

I travelled through the night on a bus to Bangalore. At my foot was the turtle in a box and I had left a small opening for her to breathe. Suddenly I noticed that the turtle was out and was already making for the door of the bus. I quickly caught her and put her back without any of the sleeping passengers noticing it except for a dear old lady who smiled and said, "Dropped your water bottle, son?"

Field Work Notes:

CROCODILES

Living millions of years before man, but today facing extinction...with many myths about them and very little known about their nature. Many are considered dangerous. None are considered useful. Who are these creatures? They are called crocodiles, alligators and lizards.

There are 21 species of crocodiles and alligators in the world.

Three species of crocodiles are found in India, namely:

1) the Gharials—which are fish-eating crocodiles;

2) the Muggers; and

3) the Salt-water crocodiles.

The biggest and the most dangerous of all crocodiles in the world is the salt water crocodile, which can grow upto 25 feet. It is the only crocodile that can live in the sea for a long time. The Nile crocodile of Africa is yet another deadly species. Fossils of three other extinct species of crocodiles have also been found in India.

These cold blooded animals have evolved with dinosaurs millions of years ago and are more closely related to birds than to snakes or reptiles. Being cold blooded they control their body temperature by seeking shady, sunny spots or different levels in water. They often bask with their jaws open, which probably helps them to keep cool.

Their eyes, nose and ears are positioned in a straight line along with head and snout. They have good eyesight and a good sense of smell, and can hear very well. Their tail is very strong and helps them in swimming. They have a very low metabolic rate and thus need to hunt only every few days. They can decrease their metabolic rate and stay under water for a long time. Alligators have been known to stay under water for upto 6 hours. They do not make any unnecessary movements but can move very fast even on land when necessary.

Small salties can gallop at a speed of 48 kph for short distances.

Crocodiles are found in large and small rivers, lakes, mangroves, and in brackish and fresh water. When a baby crocodile hatches, it is just about three quarters of a foot (25-30 cms) in length. In a few years it matures into an adult. Maturity depends upon size rather than on age. Generally males mature slower than females.

In the wild, a female will take between 5-7 years to mature whereas males will take 9-11 years. Gharials take longer to mature; about 8-10 years for the female and 12 years for the male. In captivity, such as in the Madras Crocodile Bank, females mature in four years and males in five.

The average size for maturity for a Mugger is—male (2 metres) and female (1.6 metres). Males of Gharials and Salties mature at three and a half metres and females at three metres.

Mugger crocodiles breed in between February and April. Salties breed in April and Gharials between the last week of March to the second week of April.

Breeding depends on environmental conditions. In the breeding season males often fight for the right to court with several females. During courtship each pair may blow bubbles, rub noses, raise their snout and periodically submerge and re-emerge. Different species show different courtship displays. Gharials, for example, often court each other by making a loud buzzing sound. Mating occurs under water with the male mounted on top of the female.

The average gestation period is between 35-60 days. The gestation for a Mugger is 35-40 days and for Gharials and Salties, 40-65 days. The temperature at which eggs are incubated and the moisture content of the environment (humidity) influence the sex within the embryo.

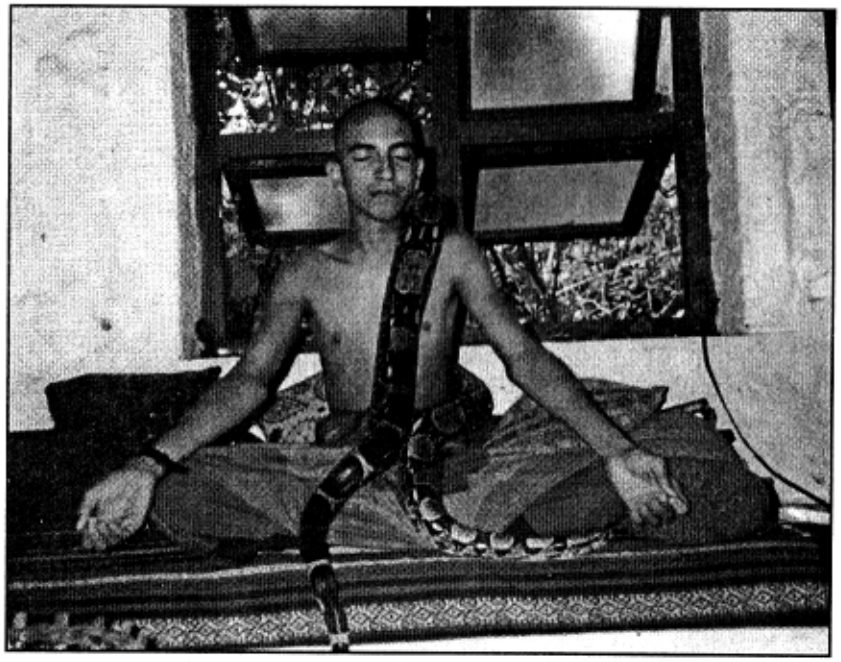
Crocodiles will either dig a hole about 30 cms deep or pile up leaves to incubate their eggs. They sometime splash water on the nest to control the temperature. In mugger crocs, females are exclusively produced at constant temperature of

28°C through 31°C. At 32.5°C only males are produced. Both sexes in varying proportion are produced at 31.5 to 33°C.

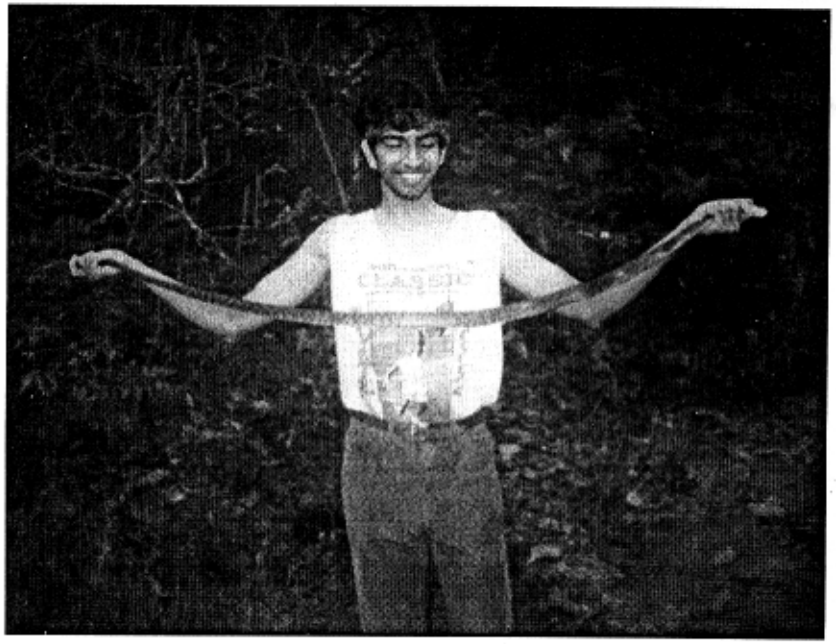
The female guards the nest. At the time of hatching the young start croaking so the mother (sometimes even the father) digs open the nest. Then she cracks some of the eggs with her teeth to set free the young and carries them to the water in her mouth. The adult crocodiles continue to guard the young until they are about 5-7 months old.

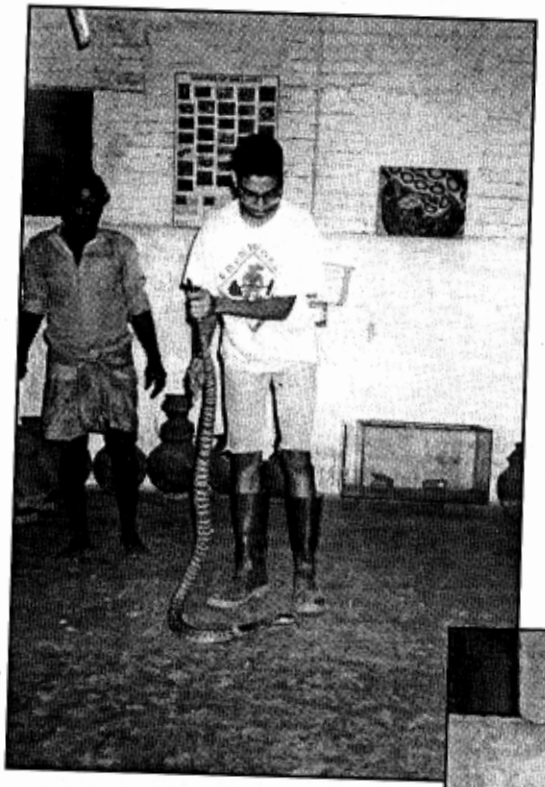
Crocodiles have many uses in nature's ecosystem. They help keep the environment clean by eating the carcasses that would otherwise rot. They capture the diseased, wounded and weaker prey thus letting only the strongest survive and thus maintaining a healthy population and keeping up the genetic quality of their prey species.

In the dry season, wallows and tunnels dug by crocs provide essential water for other animals, turtles and fish. Many animals depend upon crocs for food for e.g. the sacred Ibis and monitor lizard will eat the eggs of the Nile crocodile. Crocs are also exceptionally resistant to disease and thus may be of great use in medical research.

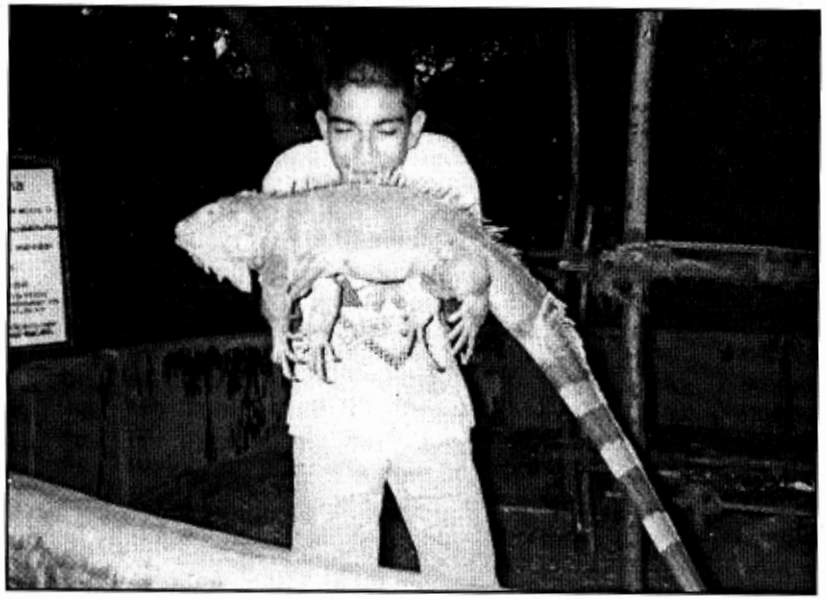


A life's ambition fulfilled. Meditating with a South American boa constrictor around my neck (above). Stretched out with a rat snake before releasing it in the forest behind (below).

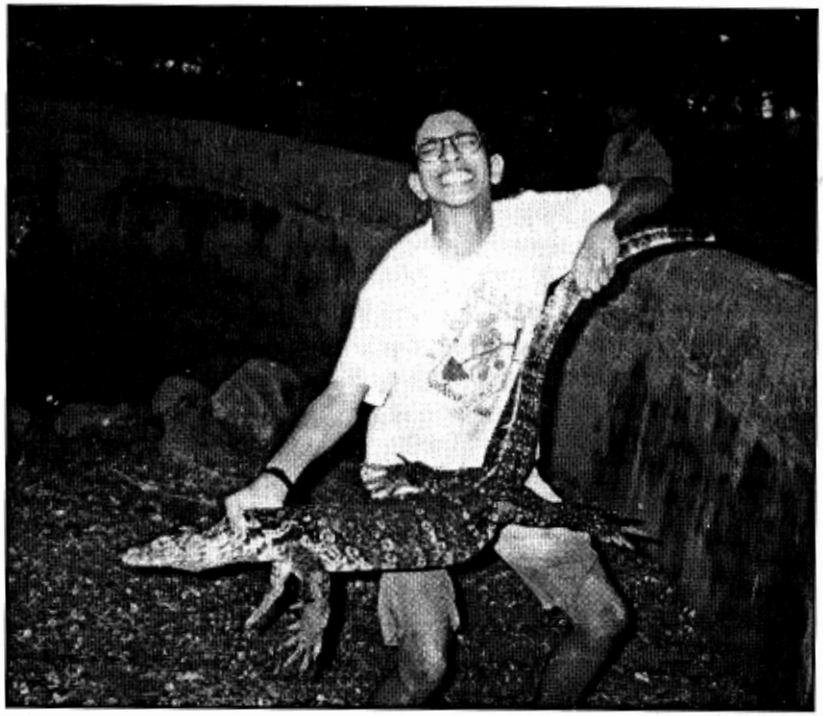


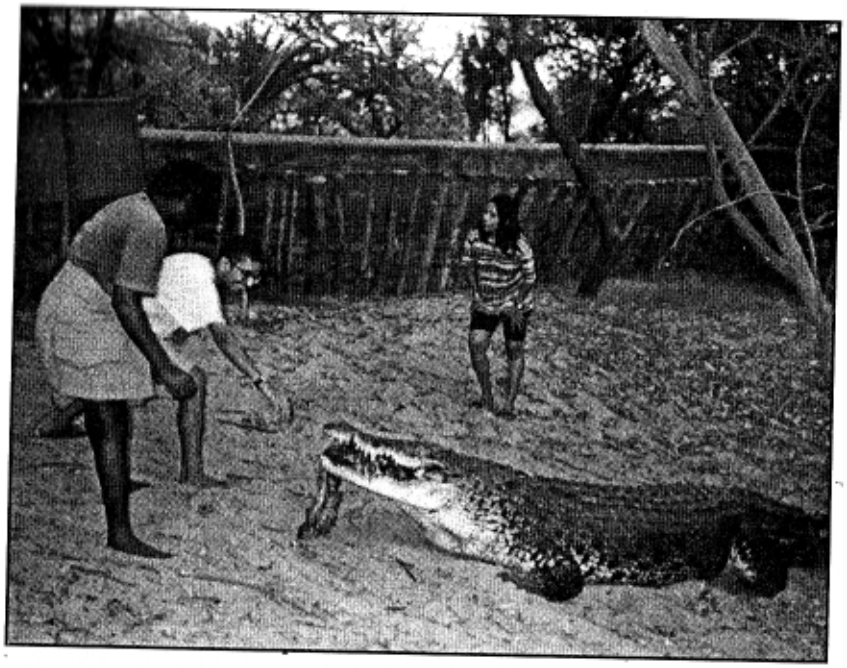


Learning to handle a cobra under the watchful eyes of a skilled Irula worker from the Croc Bank. While I catch its tail with my left hand, I handle its hood with a snake stick.



The iguana (above) was heavy to carry but I had fun all the same handling the creature standing in its pit. Monitor lizards (below) would bite if you were not careful with them, but we learnt to handle them too with ease.





(Above) Feeding Jaws III (the largest captive salt water crocodile in India) raw meat without allowing him to get a piece of your leg!

(Below) A male gharial with a broken jaw is transferred to a pit containing only female mugger crocs. An entire team of 12-14 workers was required for the operation.

11

Learning to Teach

January brought fresh experience for me and it happened entirely because of Hartman de Souza. I was to return to Goa via Bangalore and since our good friends, Hartman and Ujwala, live in Bangalore and had expressed willingness to accommodate me, should I need a place to stay for a while during my sabbatical, my parents suggested that I spend a few days there before returning home. I was to stay at their place, sight-see Bangalore if I liked and inform my parents as soon as I was ready to return. This then was the general plan.

I reached Bangalore at 1.40 p.m. on the 7th of January. Bing (that's how we all call Hartman) was at the bus-stand to pick me up, with his car. We drove to his house, me chatting

away in reply to all his questions. At home there was Ujwala and their kids, Zuri and her younger brother, Zaeer. Also living with them at the time was Mrs Kalai who was Bing's colleague at the India Foundation for the Arts.

After settling down to a good meal and generally relaxing, Bing told me that he had in mind a few people and institutions connected with my interest i.e., wildlife and that I should use my time in Bangalore to meet them. I agreed to his suggestion, little realizing that the people he suggested I meet would make their own suggestions about other people I should meet and when I would report this information to Bing, he would insist that I go and meet them as well. So I spent quite a few days meeting, or writing to, various persons connected with wildlife in Bangalore.

Bing is quite a hard taskmaster and he would not let me off easily; if the people were not in station at that time or, if the names suggested were not from Bangalore, I had to write to them instead. I wrote numerous letters as a result. The general purpose of this activity was that I should get an idea of what options were there for me if I decided to pursue a career in wildlife eventually. Bing also suggested that I should try to find out how and why these people decided to take to environment and wildlife studies, whether they were happy in their choices and so on.

Bing made several copies of an introductory cum reference letter for me which I was to give to the people I was to meet. The letter, which was signed by him, stated that I had taken a one year sabbatical to explore wildlife which I had done for the past eight months and that I would like to have a small interview with the person concerned. I also prepared small questionnaires to help me in the interviews. Bing would most often phone the person in advance and make the appointment for me. Sometimes he even reached me to the place; at other times I went in a rickshaw.

The first person I met was Mr T. Parameswarappa, Retd. Principal Chief Conservator of Forests. I reached Mr Parameswarappa's house at 11.45 a.m. I had an appointment with him at 12.30 p.m. However Mr Parameswarappa was out

and did not arrive home until 1.30 p.m. So I sat and looked at a couple of books in his office. Soon after he returned we began to talk, first about my sabbatical and then about what I wanted to do in the future.

He told me that after graduation, one must answer a competitive examination held by the Union Public Service Commission. The students who are selected are trained and then posted to a forest. At the University of Agricultural Sciences at Dharwad or Hebbal, a four year course on forestry can be done after completing pre-university. At the Wildlife Research Institute short courses may be available, he said, but after graduation long courses are definitely available.

I asked him some questions and I relate briefly the interview I had with him:

Rahul: *Is it possible to have a ranger give you a private guided tour within the Banargatta Wildlife Sanctuary?*

Parmeswarappa: I'm afraid not. There are only routine safaris for visitors. But if you like you can meet Mr Venkatesh, Deputy Conservator of Forests and give him my reference.

R: *What is the condition of the sanctuary?*

P: It is a government initiative and as you can expect, there are good and bad points to all such activities.

R: *Are there any unusual career courses offered in Wildlife?*

P: In India there are no privately run sanctuaries or zoos. Therefore any career in wildlife or forestry must be through the government. This makes it almost impossible to have any rare or unusual career courses.

R: *What are the duties of the staff at the Banargatta Park?*

P: Their only duty is to see to the well-being of the animals i.e. feed them and keep their surroundings clean. They do not study or do research on the animals.

R: *How did you acquire this post of Principal Chief Conservator of Forests? What was your background?*

P: Like you, I had to study. I answered an examination and got a job as a forest officer. Later I went to the US for two years and on my return I was appointed as Chief Conservator of Forests.

R: *Is it possible to set up a Snake Park for doing snake venom extraction?*

P: Of course it is possible. But one must apply for a licence/permission for keeping wild snakes in captivity. Pune Snake Park will know the procedure and if you write to them they will give you all the details.

Mr Parameswarappa proved to be a very friendly and helpful person. Before I left I showed him copies of the letters which I had already sent to the Indira Gandhi Research Institute and to the Indian Wildlife Research Institute at Dehradun.

My second appointment was with Mr Arun Kotankar, one of the main persons running an organisation called *Samvad* which has a programme called SMILE (Student Mobilisation Initiative for Learning) in Bangalore. I reached the office at 10.30 a.m. although my appointment was at 12 o'clock. I showed him my reference letter and in a little while he sat to talk with me.

Mr Kotankar told me about the SMILE programmes in Bangalore. On Saturday afternoons they have an informal open house at Samvad. They watch a film, have a debate or just talk on a specific topic of interest to students, like tourism, dowry, child abuse, fisherfolk's struggles or topics like marriage, love, education or parents.

Students also visit organisations working with dalits, tribals, women, street children, fisherpeople, etc. One can also learn environmental conservation. If the students cannot go to far off places and have to stay back during vacations, they are advised to take up campaigns or undertake studies on local problems like child labour, environmental degradation, construction workers' rights, etc.

Shodhane which means 'search' is a newsletter brought

out by students who have been to these exposure camps and they write about their experiences during the exposure or generally about other social concerns. One can contribute articles, poems, cartoons or stories in Kannada and English. I was quite interested to hear all that Mr Kotankar had to say about this organisation.

Later, I went straight to St. Joseph's College where according to the information Bing had, there were various environmental courses being conducted for college students. I met one of the clerks in the college office who gave me the information I requested and also a pamphlet listing the different courses one could take after graduation.

Two days later I went to meet Dr Harish Gaonkar at his house, at 11 a.m. Both he and his wife (who is German) were very friendly and I spent a lot of time talking with Mr Gaonkar who is a specialist on butterflies.

I learnt from him that butterflies are insects that are more closely related to plants than to insects. From the number of species of butterflies in an area, a butterfly collector can also find out the number of species of plants in that area. This is because each species of butterfly will use only a certain plant/plants species. For example, in Goa, there are about 250 species of butterflies, that means that there are about 900 to 1,000 plant species in Goa. This information would be much more difficult for a pure botanist to give. Thus butterflies are an ideal medium for a botanist who wishes to have an idea of the plant species in the locality.

Eggs are laid by the mother butterflies in distinct places on leaves to avoid predators from feeding upon them. They hatch within two to three days. The larvae will moult many times (on an average five) to become a pupa. During the pupa stage, it does not feed and after a few days it emerges as a butterfly. It waits for about 10 minutes to dry its wings in the sun and then flutters away. The whole process to become an adult may take a period of five weeks to two months. Then the butterfly will live for about 2 weeks, and within the first few days, will lay only one batch of eggs.

Moths are the ones that spin silk. No butterfly spins silk. There are about 10,000 species of moths in the world—much more than butterflies. Some butterflies and moths are poisonous e.g. the Crimson Rose, even found in Goa. It is a butterfly with wings and a red body. It also has red dots on its wings and black dots on its body. The smallest butterflies are about a few centimetres in size and one of the biggest butterflies is about the size of two palms put together.

At the end of the meeting Dr Gaonkar showed me some books on butterflies and some papers written by him on the subject. At around 1.30 p.m. I took leave of him and left for MES College where I had an appointment with Dr Leela for the same afternoon. There I saw preserved dolphin tails and specimens of hammer-headed sharks.

My stay in Bangalore also became very special because of the Times of India programme that Bing managed to arrange for me. *The Times of India* in Bangalore has a special section called "Newspaper in Education". One of the programmes of NIE is to have workshops in schools on varied topics. On the 20th of January, I went to *The Times* office on M.G. Road and after talking with the person in charge for sometime about what I had been doing during the past year I was asked whether I would take a few workshops in some schools over the next couple of days. Although I was not too certain how well I would do this job I agreed because if there is one thing I learnt during my sabbatical it is that one should always give a try to anything new because things are not always as hard as they might appear to be. So I said yes.

My first workshop was on the 22nd of January. I was picked up by one of the organisers from NIE and taken to the Srivani Education Centre where I was to speak to the students of Standard VIII. I was expected to speak for about 35 minutes and keep around 10 minutes for questions or discussion.

I was a bit nervous at first but as the talk progressed and I found the students listening attentively I talked more freely. After these sessions were over I would be dropped back home or to Hartman's office whichever was nearer. After the first few schools went off well and I became accustomed to the routine I found myself enjoying these classes. I was even more pleased to learn that I would be paid Rs.100 per workshop plus my travel costs.

For the talk I would start by telling the students about my sabbatical, how the idea came up, the various places I had visited and the various things I had done so far. After that I would speak about two topics—vermiculture and snakes—because I thought that these would be of most use to the students. Vermiculture because they could practise this at home to process the garbage into compost and snakes because people have so many fears about them.

When I talked about vermiculture, particularly about mixing cowdung with soil, sometimes the girls and boys would find it distasteful and would make jokes about it or laugh at the idea and I would think that these are city kids and they don't know anything about cowdung. But still I would continue to explain how a vermipit can be set up in their homes.

On snakes, I would first give general information about poisonous and non-poisonous snakes, and how to identify the poisonous ones. Then I would tell them what should be done if someone got a snake bite. I would also discuss the various beliefs that people have about snakes and which of them are myths. Depending on the time left, I would speak about other things too, like crocodiles, turtles or spiders.

At the end of the class, I would show them croc teeth, photos of myself with snakes, crocs, monitors, etc., and then my red-eared turtle that I always carried around with me in my bag. At this point there would be maximum excitement. Everyone would crowd around, some would ask to hold the turtle and they would ask questions about its eating habits etc. I would allow them to touch the shell and nothing more because the turtle is very nasty and bites.

In this fashion I took workshops at several other schools including National English School, Sindhi School, St. Mary's School, Bolivian Girls School and Bangalore International School. I usually spoke to the students of Class VII to X. At Bangalore International School however the workshop was for the students of Class III and IV.

A few months later back in Goa I was pleased when the postman handed me a registered letter from NIE, Bangalore which contained a cheque for Rs.1075, my full earnings for giving the lectures. Later when I wrote an article on my one year sabbatical for the *Hindustan Times* I sent a copy to NIE and they too published it in their newsletter. Newspaper in Education has also invited me to take more workshops whenever I am in Bangalore.

Bangalore was very enjoyable in many other ways as well. One morning I went to a swimming pool with Kalia and

School kids everywhere would be most eager to touch and feel the turtle I carried along with me.

got the shock of my life on jumping into the water; it was freezing cold! I resolved never to try swimming in Bangalore in the winter again.

I ate out often especially during the day and tried out various small eating joints (Bangalore has plenty of them), sampling South Indian food, vegetable cutlets, milk shakes and so on. Of course, I constantly had to watch my purse, for my budget did not allow lavish eating. Sometimes I went to a book shop, sometimes I did small errands for Bing and Ujwala, and I recall helping Bing with the cooking on at least two occasions and occasionally helping Ujwala with her garden.

I also used to accompany Bing and Ujwala and their two kids on family outings. Once we went to a lake called Sanki Tank where I enjoyed motorboat rides and then played with Zuri and Zaeer in a small children's park. Another time, we all went to see a dance performance that I didn't understand too much about. Sometimes we all just went out for a drive (I enjoyed these rides best) and then would have ice-cream cones on the way home.

I must tell you how I learnt to eat vegetables. I have generally disliked vegetables as far as I can remember. My mum tells me that she regularly fed me vegetables as a baby and we have always had one or two vegetables on the table at home for any meal. Still I would generally refuse vegetables and preferred to stick to fish curry and rice, our staple food in Goa.

When I was starting on my travels my parents warned me that in several places the food would be only vegetarian, and that did happen to be the case. During the year I learnt how to eat all types of food at different people's houses. But I stuck to veggies I could tolerate like cabbage and potatoes or I would eat the dhal and rice with pickles. I had still not started eating vegetables like ladyfinger and brinjal. Bing found out about this when chatting with me and said that he hated anybody making a fuss about food. So everyday while eating he would put a huge helping of vegetables on my plate. Especially the ones I didn't like, like tomatoes, brinjal and ladyfinger.

I would finish the vegetables first so that I could enjoy the better part of the meal i.e. the meat or fish without having to deal with the veggies. But no sooner had I finished the vegetables, he would say: "Oh lovely, you like this vegetable? Have another helping!" and despite my protests I would get another huge helping of vegetable. In this way I would eat about three times the quantity of vegetables as I took the first time before I finally ended my meal.

Eventually, I stayed on in Bangalore for three weeks, returning home only on the 30th of January. I had not met my parents and brothers for nearly 3 months and was eager to share my experiences with them. Unfortunately when I arrived, I got just an hour or so to chat with my parents as they were leaving that very day for a 10-day stay in Delhi to attend the World Book Fair along with some of the staff from *Other India Bookstore*. So I had to wait till their return to regale them with my tales.

But in the meanwhile there were my two younger brothers eager to know about my travels, my neighbours who hadn't seen me for five months and of course my old pals like Ashok who were happy to welcome me in their midst again.

12

YOU HAVE SIGHT, I HAVE VISION

I was at home for practically the entire month of February, partly because my parents themselves were away for nearly half the month and had asked me to help in the house during that time. Also, I had to re-plan my programme for the last few months of my sabbatical and some time was always needed for replies to be got from the people we had written to..

I found that I had completed most of the things I had set out to do during my sabbatical though there were a few areas like honey bees for which definite programmes had not yet been worked out.

I busied myself during this time with writing out those special essays of the past couple of months that I had not yet completed (though my daily diary was up-to-date and in perfect order).

I also set up the earthworm vermicompost pit in our backyard. It was my dad's idea that I should put into practice immediately the vermiculture that I had learnt, since managing garbage is becoming a problem in almost all households. His idea was that once I mastered the technique of setting up the vermipits by trial and error at home, I could set the same type up with little variations if needed for friends of ours and later for anyone who wanted this useful method of garbage management.

Dad suggested that I prepare a large vermipit which would be suitable for any family having a large compound like we have and also one or two small vermibeds which could be

used by people living in flats who do not have lots of space of their own. We would keep all the pits going by putting waste into all of them from time to time and this way I could get experience on how the big and small pits both worked so that when people asked for such information I would readily have it.

So to start with I had to construct a vermibed. I began with the tank itself which was to be of brick. We had a labourer doing some odd jobs at that time at our house and he said he knew a bit about how to cement bricks together, so he and I constructed this 3' by 2' by 4' high tank of bricks. We mixed cement and sand in some rough proportion with water. Within a day we had the bricks placed one over the other with the cement mixture holding it all together. This was easy stuff I thought as I wrote out my record of how many bricks and the quantity of cement and sand we had used to construct the bed.

Next day, I dutifully wet the construction twice as instructed in order to have the cement set. Imagine my shock when on the third day I found that our entire tank was shaking and ready to collapse. I rushed off next door to my neighbour Guru who took one look at the tank and told me that we would have to take down the whole thing and start from scratch again. Apparently we had not used the right proportion of cement and sand mixture, or laid the bricks right. Nor had we laid any foundation for the structure. Masonry was not that simple, I realized.

I immediately got down to carefully removing each brick without damaging it as the bricks were to be re-used. Guru, the expert mason, then came over to construct the tank, and I helped. In fact, we built two tanks that day: one large and one medium. I then prepared the vermipits and Yesu, our maid, was instructed to henceforth put all the household wastes (except paper and plastic) into the pits, alternating between the different ones.

We also started vermiculture in a wooden crate. Eventually the crate was used as a seed bed and a fine crop of jackfruit seedlings was raised in the box. The other two vermipits (of brick) function well, and all our household waste is processed by the earthworms.

At the end of February, I was eager and ready to set out again. Although some contacts for the study of bee-keeping had been made by my dad, I was personally not very much interested in the subject. Crocs, snakes and the wild had gripped me and I was longing to get back to the Croc Bank.

I also had another totally unrelated and unconnected programme that I wanted to accomplish, namely to improve my eyesight by taking a course on eye care and learning eye exercises at the Eye Clinic at the Aurobindo Ashram in Pondicherry.

I came to know of the Eye Clinic through Farida, one of the resident staff at Croc Bank. I have been wearing glasses since class IV when my mum made the discovery that the reason I was not copying lessons from the blackboard was not because I was inattentive or disobedient but simply because I couldn't read clearly from the blackboard at all. Then came the visit to the oculist and the mandatory spectacles.

But I fervently wished to rid myself of these glasses ever since I heard that with eye exercises one can improve one's eyesight. In fact, I had begun doing eye exercises with Sister Gemma, a Medical Mission Sister who is associated with my parents' work. I had continued these exercises when I was at the Croc Bank, where Farida seeing me at it, had told me about the Eye Clinic at Aurobindo Ashram where I could get proper training.

As I was also eager to return to my favourite Croc Bank and since Pondicherry is not very far from Mamallapuram I proposed to my parents that I be allowed to go to Pondicherry via Bangalore, complete the eye course there and then proceed to Croc Bank where I could spend a fortnight or so before returning to Goa. This would comfortably keep me away during the month of March when my brothers would be studying for their school finals and I would return in time to enjoy the April-May vacations when our cousins from Belgaum, Lucano and Ricardo, would join us for a whole summer season of mangoes, jackfruits and umpteen picnics on the beach.

My parents approved of my programme and on the 26th of February, I set out for Pondicherry. By now I was quite fa-

miliar with the routes and did not need anyone to pick me up from the bus stops on arrival. However, I had phoned Bernard at Auroville earlier and made arrangements to stay with him at Auroville for the duration of the course.

I travelled by an overnight bus from Goa to Bangalore, rested briefly during the day at Hartman's place and caught the night bus again at Bangalore bus station arriving at Pondicherry at 4 a.m. There a cycle rickshaw fellow managed to cheat me of Rs.40 by promising to take me to Auroville but instead depositing me at Aurobindo Ashram which was more or less next door to the bus stop.

I had to get into another local bus to get to Auroville which was more than 10 kms away and after walking a short distance was greeted by Bernard, whom I knew, as I had met him some months earlier on my first visit to Auroville. I stayed free of cost at Auroville in a room in Bernard's quarters, sharing with him the meals he prepared.

I cycled twice a day from Bernard's house to the Ashram. At the Ashram, I used to do my eye exercises and then return home. I did a total of 45 kms of cycling per day i.e. 360 kms of cycling for the nine days that I was there.

The Ashram itself was an old building. Before you entered you had to leave your slippers outside and place a plastic tag, with a number, on them; another tag, with the same number, you carried in your pocket as you walked barefoot up the stairs of the ashram. The place reminded me of a retreat centre with people in meditative moods and soft Indian classical music playing continuously.

The first exercise was the most terrible one. I would have just reached the Centre after cycling in the sun when honey drops would be put in my eyes. I then had to stand sweating in the sun with my eyes burning because of the honey. (Honey is sweet on the tongue but burns in the eyes.)

The next exercise would be struggling to read fine print in the dark with only a candle light burning. Next, one had to carry out the same exercise in normal sunlight, outside. There was an exercise involving eye movement through the use of a small rubber ball, then the reading of a chart with letters and

Struggling to read fine print in the dark with only a candle light burning.

words of diminishing size in varying degrees, bathing the eyes with steam, much in the same way as inhalation is done, and then cooling the eyes with cold cotton packs. Finally, there was the colour treatment, where one stares at bright colours reflected over a lamp in a darkened room.

Each exercise had to be performed a specific number of times with small details like opening, shutting and blinking of the eyes controlled to the finest degree. After I finished I would return to rock music on a walkman, on my way to Auroville.

There was no charge for the 10 day course at the Ashram but at the end of it I paid Rs.77 for the material needed to enable me continue with the exercises—namely, 4 bottles of eyedrops, 2 small jars of honey, one rubber ball, two charts and two booklets with fine print.

I benefitted a lot from the course and within a month or so, after regularly doing the exercises, I was able to read without spectacles. I still do the exercises, though not so regularly,

and the best part is that after having been a regular wearer of glasses I now have to use my glasses only occasionally, like when watching TV or movies—which I do very rarely anyway since we do not have a TV set at home.

After the course was over I was eager to get another look at the Croc Bank and as per the prior arrangements made on telephone I set out for Mamallapuram, once again, on the 7th of March.

A funny, but expensive incident happened to me on the way.

I got to the interstate bus station early that morning and waited till 8 or 9 a.m. for the bus going to Mamallapuram to arrive. I started asking around and eventually I was directed by a bus driver to the Mamallapuram bus.

Before I could reached the bus a man dressed in a conductors' uniform walked towards me. "Where are you going?" he asked. "To Mamallapuram", I replied. "Come, come with me", said the man. We both got into the bus, I took a seat and he put my luggage on the overhead rack. "Ticket", he demanded. "How much?" I asked. "25 rupees", he replied. I handed over the amount to him.

Shortly after the bus had started on its way, and to my astonishment, another conductor appeared and started issuing tickets to the passengers. I explained that I had already paid Rs.25 to the other conductor only to find that there was no "other conductor", only a clever cheat who had taken me for a ride while the bus was still stationary. I had to shell out another 18 rupees for my journey to the Croc Bank! What I found hard to accept was that the man was able to cheat me in front of all those passengers sitting in the bus. No one thought to tell me that he was not the real conductor.

This time I stayed at the Croc Bank only for a week as Rom, Harry and everyone else on the farm were leaving for Kerala to continue with the *National Geographic* film programme and there was little else I could do at the Croc Bank with everyone away.

13

SURVEYING A FOREST

The summer vacation that year was great fun. My cousins from Belgaum arrived on schedule and since no one had Board exams that year the holiday season began in the first week of April itself. We would enjoy two whole months of the sea, swimming as often as we could in the river that joins the sea at Baga.

One morning in May my dad asked me whether I'd like to participate in a project that the *Goa Foundation*, an environment organisation of which my dad is Executive Secretary, was organising for college students. I agreed. The project turned out to be field visits to the forests in Betim in order to identify which areas were still forest, which areas had been cut

down and by whom, which projects/constructions had come up, and so on. The two students who had opted for this project were Stephen and Jerry, both from St. Xavier's College, Mapusa doing their graduation degree. I joined the team as an extra.

On the morning of the 20th of May, Dad and I set out in the car for Betim. On the way we picked up Stephen and Jerry. Dad showed us the different spots in and around the area he wanted us to cover and then left.

Steven was the leader of the team. He had obviously been briefed by Dad on how we were to proceed for he soon took out a note book and started writing notes. I took my notebook and wrote down some names of birds. Stephen said that just in case anybody questioned us, we were to say we were birdwatchers!

We found two illegal houses in the middle of the forest and a huge clearing made by cutting a lot of big trees. The trees appeared to be cut with the use of an electric saw and tar was smeared on top of them to prevent further growth. Many logs were thrown nearby. It was a tiring task and being the month of May, it was extremely hot and my shoes had begun cooking my poor feet. Even if we saw a small path, Steven would insist we go to the end. Jerry would sometimes complain, "Steven who the hell do you think will go down there, in that inaccessible valley, to cut trees?" But Steven was stubborn and would retort, "Jerry if we don't go down there we will have it on our conscience that there was a path which we could have checked out but didn't." So we trudged down each and every pathway we saw, howsoever narrow and unused it appeared to be.

On the second day, I went on my bicycle to Betim. We continued and we found another two illegal houses and a big tree cut, on the hill. This tree was also smeared with tar. The exercise usually took the whole morning and we would call it a day by about 2 p.m. or so.

On the third day, my Dad and my cousin Luke joined us. We showed my father the different spots we had visited, the places where trees were cut and the illegal houses. Dad had

brought along a camera which he gave to Stephen to take photographs of the different patches of forest, the felling and the constructions. In some areas we found that fire had been set to the area after the trees were cut and this had destroyed the scrub bushes as well.

I was glad that the fourth day would be the last, since by now I was quite tired of this assignment. I had a lot of thorn pricks all over my body and they had become little itchy swellings. My feet were also sore and the heat was killing. But I carried on, as the project was near completion. On the hill we found a lot of houses, several of them illegal, coming up in the forest. We also found clear-felled plots with barbed wire fences around.

My part of the assignment was over that day and I received a small stipend for my work from the Goa Foundation. Steven and Jerry later prepared the project report with photographs and write-up. The report was submitted by the Foundation to the Forest Department. The department sent an officer to investigate the matter and also issued orders not to allow felling or constructions in the area.

14

Chief Guest At Belgaum

A year had gone by since I had finished school and what an exciting year it had been. Having to go to college now seemed quite tame in comparison. But as I busied myself with filling up the admission forms and getting the ID card photographs ready another surprise awaited me, and it came from a totally unexpected place.

I was invited to be Chief Guest at an Environment Day function to be held in Belgaum on 5th June, World Environment Day, where I was to speak on my experiences during the past year. This was surely the crowning event of my one year sabbatical.

The invitation came from Dileep Kamat who was one of the organisers of an environment awareness programme, which he and others in Belgaum had organised for school children during the previous month. The programme included painting and essay competitions. The concluding part of the programme was to be held on 5th June where the finalists would give their speeches and the winners of all the competitions would be given their prizes.

Dileep, his wife Nilima and their son Partha are family friends of long standing and whenever Uncle Dileep comes to Goa he stays with us. As he explained, the purpose of the environment programme was to inculcate the idea that one can do things on one's own and one has to think out ways and means for this. And so, he said, he had considered the idea of inviting a young person, whom the students could identify with, to speak on the occasion. The Committee had wholeheartedly approved when he suggested my name as I had done

something quite unique during the past year; and the fact that my preference was in the field of ecology made me an ideal choice, according to Uncle Dileep.

Of course I was delighted and accepted the offer. Who wouldn't be? Uncle Dileep said that all my expenses would be taken care of. I had an uncle (my father's youngest brother, Benjamin) at Belgaum, at whose house I could stay. There was only my bus ticket which the organisers had to pay for.

I started preparing my speech straightway as there was only a week left to go and I knew that I had do a good job as this was a big occasion for me. As usual I turned to my mum for help. She helped me choose the points I would speak on, then I wrote out my entire speech which she corrected and I set about memorising it.

Public speaking was not a major problem for me nor did I suffer from stage-fright as I had participated in several school competitions and also represented my school in inter-school debates. In fact, I had been awarded the Best Speaker prize in my final year at school. Still, speaking at a competition was one thing and being the main speaker for the day was quite another.

My mum gave me several tips on how to address the gathering, what I should do if I felt I could not remember the next line and so on. I rehearsed the speech several times at home and when I left on 3rd June for Belgaum I felt quite confident and well-prepared.

Along with essentials like clothes to wear, etc. I carried with me in my haversack my red-eared turtle, and another small turtle found locally in Goa, the croc teeth and photos of myself at the Snake Park, the Croc Bank, etc.

I arrived in Belgaum on 4th June and was met at the bus stand by my cousin Lucano who took me straight to his home. That evening Uncle Dileep came to our house, briefed me about the next day's programme and when he left he took with him the photos which he said he would put up on exhibition at the hall.

The next day Lucano took me to the venue at 3 p.m. The function was held in the school hall. There were children from several schools already there along with their parents. I noticed my photos put up on a cardboard on one side of the hall. My uncle Benjamin and aunt Grace and my other cousins also came for the function which began at 4 p.m. The hall was quite full when I entered. I was seated in front with my cousin Lucano next to me.

The programme was compered by one of the students. It began with the prize winners of the elocution competition delivering their speeches—one in English and the others in Marathi and Kannada. Then one of the students introduced me to the audience and I was called up to the stage to deliver

Speaking as Chief Guest at Belgaum on June 5th, World Environment Day

my speech. I spoke in English and initially had to halt every little while for Uncle Dileep to translate what I had said into Kannada. Fortunately, however, after a few rounds of this English-Kannada speech it became obvious that the audience did not need the Kannada translation since they all understood English quite well. Then it became easier for me to continue and I finished with great confidence and was roundly applauded.

As I had done in the workshops I had conducted in the Bangalore schools earlier, I then took out the red eared turtle which I carried around for the audience to see at close quarters while my cousin took around a local turtle which those who wanted could handle. There were many students and parents who wanted to be photographed holding the turtles. I also showed the croc teeth to those who were interested.

The compere then announced that they would like to get on with the rest of the programme, but in view of the fact that several students wanted to ask questions, a question-answer session would be held, after the programme of skits was over. I returned to my seat and watched the skits which were on the theme of ecology.

After that was the prize distribution ceremony and I was called up to the stage to hand out prizes to the winners of the various competitions (elocution, as well as dramatics and drawing which were held earlier).

After this, the organisers allowed questions from the audience which I answered on the spot. I was quite happy to find that the audience had heard me attentively for there were many questions both from students and adults. Most of these concerned information about snakes. From this I gathered that snakes not only frighten people but fascinate them as well. The function ended at around 6.30 p.m. Before departing, the organizers gave me an envelope containing Rs.300 which more than amply covered my expenses for the trip.

Uncle Dileep invited Lucano and myself for dinner that night. On seeing that he had an interest in keeping the small turtle, I happily left it behind for him. Next morning I was pleasantly surprised to find that one of the local Kannada pa-

pers had reported the previous day's function and there was a photograph of me at the function and a report on it as well. I was thrilled beyond words.

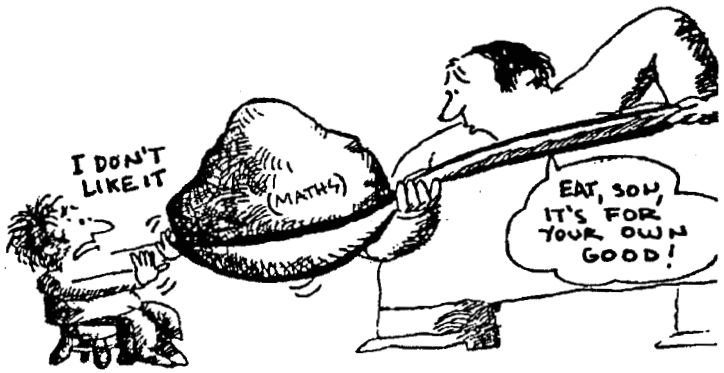
Later I wrote an article on my one year sabbatical for the *Hindustan Times* which appeared on the Youth Page together with a couple of photographs and was pleased when my parents told me that several of their friends had read it and had complimented them and me for this bold and unusual step of taking a break from studies. The same article was eventually carried by several other newspapers and magazines including *The Utusan Konsumer* in Malaysia.

In my speech at Belgaum, in the workshops I had conducted at Bangalore for the school students and in the article I wrote I always recommended at the end of my presentation that every student ask their parents for a break from regular studies when they finished school as it is something they would never regret.

And I wish to repeat here, at the end of my book, that June 1995 to June 1996 was the most wonderful year that I can ever remember. I learnt a lot, not only about the things I wanted to learn, but about many other things as well. And best of all I had a lot of fun and a whole lot of freedom to do all that I ever wanted to do. I certainly look forward to another sabbatical! And so, by now, should you!

...the most wonderful year that I can ever remember...

DANGER SCHOOL!



If you ask the children their opinion about school, you will find that most of them are spontaneous school-haters and teacher-baiters most of the time, ready to drop school at the earliest possible opportunity.

Millions of children go to school despite the universally accepted opinion that learning stops when school begins.

Schools deprive children of their childhood, substitute work for play, damage imagination and replace it with sundry, sterile information of precious little use. No wonder radicals compare school with zoos. In zoos, animals and birds which should be wandering about freely in nature are kept in cages. In the school, minds that should be permitted freedom to be creative, are forcibly shunted into boxes into which chunks of information are dumped by equally bored teachers.

Danger School examines in cartoon form the real threat that the modern school poses to children's sanity and parental hopes. It lists the manner in which the school actually immobilises and kills children in its quest to subordinate their behaviour, training and spirit to the requirements of a system that is in nobody's interests except those who run the modern economy and destroy the earth.

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